

AMERICAN GAS ASSOCIATION MONTHLY



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No community
can grow faster
than its public
utilities.

Phillip H. Gadsden

C O N T E N T S

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"Our 400"

Possibly if it was intimated to any gas man that he was in any way connected with "The 400," he would indignantly deny such an accusation. "The 400," supposedly the social elect, the aristocracy, could not possibly be a body with which he was in any way connected.

And he would be right. The good gas man would not want to be classified with *that* 400.

Nevertheless, the gas man who is a member of the A. G. A. is directly connected with "Our 400."

But, "Our 400" does not stand for social preeminence or aristocratic lineage in any sense of the word. "Our 400" represents that number of our membership, specialists in their various lines, who form the active committee personnel of the Association.

Think of it. Think what it means.

Here are 400 men, busy men, each with his own position to attend to, each with his own batch of troubles and worries such as beset all gas men, each with his own problems to be solved every day, who, nevertheless, are freely giving of their time to help solve those greater problems of the industry as a whole. They have unselfishly taken on these extra burdens on top of their already heavy load.

And then, when we have realized that phase, let us consider another side.

Through this, "Our 400," the members of our Association are enabled to get expert advice, authoritative consultation service on problems in any and every branch of the industry's work. Manufacture, distribution, accounting, utilization, management, appliances, commercial effort, publicity, advertising—are but a few of these.

For that is, in reality, an additional province of Association committee work—to give our members the service, the maximum information and assistance that is represented by this, "Our 400."

In this light, our members should consider themselves directly connected with "Our 400."

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The Fallacies of Depreciation Theories as Applied to Public Utility Properties*

ROBERT A. CARTER, Vice-President, Consolidated Gas Company of New York, New York, N. Y.

RESPONSIBILITY for my addressing the Metropolitan New York Section of the National Electric Light Association this evening, as well as for my subject, rests upon your Committee. I make no apology for the subject, but I warn you that the discussion of it will bear no resemblance to a "bed-time story." I have, in fact, no hope of entertaining you, but I do hope to interest you all, including the ladies, in a very important subject. If I succeed in interesting the ladies, I shall feel that I have accomplished a great deal, and that, as the result of their intuitive grasp of the subject, I shall have their support in arousing an even greater interest in it on the part of the opposite sex.

The depreciation theories which I am attacking are of comparatively recent origin.

Twenty-five years ago "theoretical straight-line depreciation" was unheard of. In the famous rate case decided by the United States Supreme Court in 1898, familiarly known as the "Smyth vs. Ames" case, there was not the slightest allusion to depreciation of any sort.

Although public utilities had then been operating in this country for nearly a century, the proposition that the value of their properties had suffered impairment by reason of mere lapse of time had never been broached. With the development of socialism and its creed that the state should own and operate all essential industries, but first of all the so-called "public utilities," came this crafty, Machiavelian theory as a means to that end. The utilities were to be acquired, but not at a fair price. Your public ownership fanatic does not know what the word "fair" means. He uses it frequently enough, but only to beguile and humbug. When he prefixes "fair" to the word "value," he does it to denote something less than value. When he says "fair," he means "unfair."

The Plans for Facilitating Public Ownership Through Drastic Regulation

The plan was that utility properties were to be acquired at less than actual value which necessitated setting up some kind of theory of depreciated value, and a formula for computing it. Until

*An address delivered before the Metropolitan Association.

New York Section of the National Electric Light

acquired, their rates were to be adjusted to a depreciated value. Utilities were to be unmercifully taxed and drastically regulated until they were driven to the point where the sale of their properties to the state would be deemed, by their security holders and managers, a welcome relief from their troubles. Their earnings were to be so impaired by taxation, depreciation theories, and regulation, that it would be impossible for them to finance their capital requirements and thus fulfill their franchise obligations to furnish all the service the public demanded. It was to be made impossible for them to function as privately owned public utilities.

Early Forms of the Depreciation Fallacy

When theoretical depreciation was first exploited, it was in its crudest form. Its exponents thought that, by the simple process of assigning periods of life expectancy to all types of plant and equipment, then to the extent that such life expectancy could be assumed to have elapsed, the property could be made to appear to have depreciated correspondingly in value and could be acquired by the state at the depreciated value; or that, pending such acquisition, the rates for service could be so adjusted as to yield a return only upon the depreciated value. If, for example, it could be plausibly asserted that buildings had a life expectancy of fifty years, and a given building was erected twenty-five years ago, at a cost of ten thousand dollars, its present value was five thousand dollars. By this simple process the value, based upon original cost, of the property of a railroad or an electric company could be cut in half, by any unscrupulous *soi-disant* "expert," on short notice, with the greatest ease, and without even a casual inspection of the property.

It soon became apparent, however, that there was a fundamental economic obstacle to carrying out such a knavish plan, as was quickly pointed out by those of the utility fraternity who were far-sighted enough to see through it. It was urged by them that the properties of utilities, acquired for and devoted to the public service, could not be confiscated through any such fraudulent device without violating the common law. If any such loss in value, as was alleged, had resulted from the use of a utility's property by the public, it was a loss chargeable against the public, and no such charge had ever been made. Therefore, no deduction could be made from the cost of the property, in the absence of evidence that to a corresponding extent the investor had been reimbursed by the public through the rates charged for the service. At the same time, it was contended by those who saw the poison of the thing, that the whole proposition was simon-pure unadulterated "bunk"; that no depreciation reserve ever should have been collected; that the theory of life expectancy in utility property was a palpable fraud; and, in brief, that the property of a utility did not "depreciate" in the manner alleged at all.

And I may say right here that if at that time the directors and executives of the whole utility industry had aligned themselves squarely against this radical proposition, I would not be talking to you about it tonight. It would, years ago, have met the fate of all impostures and delusions, and be classed with the Keely Motor, the Mississippi Bubble and the theory that the earth is flat and the sun travels around the earth.

The Introduction of Depreciation Theories Into Accounting Systems

The idea was then conceived by the radicals that it might be assumed that

utilities had earned in the past more than they were entitled to and that such excess earnings really amounted to a reimbursement of their investment and that, even in the absence of any provision for it, the deduction of so-called "accrued theoretical depreciation" could be justified. The exploiters of this theory, which included some college professors, engineers and economists of the radical school, were able for a short time to impose this device for confiscating property upon some commissions and some courts of law, but it was rejected with so great frequency as to result in a general movement for the state regulation of the operations and accounts of utilities, which was highly successful. The public utilities accepted state regulation as offering possibilities of a better understanding with their patrons and freedom from vindictive municipal harassment.

The plan of the radical socialists was to provide, through accounting rules, for the accrual of so-called "depreciation reserves," ostensibly designed to provide, in advance, for the ultimate renewal and replacement of property, but actually intended to be construed as a contribution on the part of the patrons, through increased rates, to the utility's capital requirements, thus effecting, in time, a piece-meal purchase of a substantial percentage of public utility assets. The immediate purpose, however, of their plan was that, through the acceptance by the utilities of such accounting rules and the accrual of such reserves, the utilities should commit themselves to the theory that, due to such causes as "wear and tear, decay, inadequacy and obsolescence" their properties were undergoing an annual, monthly and daily impairment of value, for which the depreciation accrual was designed to compensate them. Having committed the utilities to the theory, by their acceptance of it,

the radicals would be in a position to claim that the utilities had been negligent in the past in failing to accrue adequate depreciation reserves, that the rates had been adequate, but that the reserves had been dissipated in dividends, and that the utilities must now pay the penalty for past improvidence.

In furtherance of this end, a group of radicals availed themselves of the National Civic Federation as a channel through which to surreptitiously promulgate to the various State Legislatures a so-called "model public utility law" in which was incorporated all their radical plans for the ultimate acquiring of public utilities by the state or by municipalities. Laws based more or less upon this so-called "model law" were enacted in many of the states, and systems of accounting, designed to carry out the plans of the radicals, were also quite generally adopted.

Early Errors of Many Utilities in Accepting Depreciation Theories

The depreciation theory met with no great amount of opposition on the part of legislatures, commissions or utilities, principally as the result of ignorance or apathy. Without taking the trouble to ascertain just what it all meant, many utilities began accumulating depreciation reserves at the expense of their patrons and investing the depreciation funds in additional plant and equipment, and apparently thought they were "getting away with something." When complaints were made of their rates and commissions adjusted their rates so that they were able to earn a return only upon their investment after deducting therefrom a substantial amount of accrued theoretical depreciation, some of them had not even sense enough to protest, even when the amount deducted sub-

stantially exceeded the amount that had accumulated in their depreciation reserve. Others protested, alleging that their property had not depreciated, which, of course, was a fact, but ended by accepting the deduction. Others, discerning the economic unsoundness of the whole thing, carried their cases into court and in some instances were successful and in some unsuccessful in having the commission findings reversed.

In the meantime a great deal of sound educative work was undertaken on the part of a few who had never accepted the depreciation theory; who had never kept their utility accounts in conformity with commission accounting systems which undertook to prescribe it; who had never accumulated depreciation reserves, and who realized that the ultimate effect of the survival of the depreciation theory would be the expropriation of billions of dollars worth of utility properties. The result of this activity was that the commissions as well as the courts began to realize that the whole theory was unsound.

The Leadership of the Regulatory Commissioners for Sound Accounting Provisions

Three or four years ago the National Association of Railway and Utilities Commissioners conceived the idea of having its own accounting committee take up the subject of utility accounting and perform the considerable task of formulating a classification of accounts for gas and electric companies which might be adopted by the various states, thus bringing about substantial uniformity in the accounts and reports of utilities. This able and industrious committee was assisted by representatives of the accounting committees of the National gas and electric associations.

The result of their joint efforts was a uniform classification of accounts in which the much misused word "depreciation" does not occur. In lieu of providing for theoretical depreciation based upon life expectancy and upon the trumped up assumption that "every day in every way" property declines in worth or value on account of "wear and tear, decay, inadequacy and obsolescence," the National Classification of accounts provides only for defraying the cost of actual retirements of property as and when made. This is effected by means of a retirement reserve account which is created and maintained through charges to operating expenses and against which the loss due to retirements is charged. The purpose of this account is to equalize the effect of retirements so that a disproportionate burden may not fall upon the operations of any one year.

The National Classification provides also for another account called "Property Abandoned" account, intended as a suspense account, against which there may temporarily be charged any very large retirement of plant or equipment for the immediate writing off of which the normal provision for retirements is inadequate. Retirements thus charged are to be amortized through annual or more frequent charges over a definitely determined period.

The Excellence of the Accounting Provisions of the National Association of Commissioners

These accounting provisions, set forth in the National Classification, deal with facts instead of dealing with theories and assumptions which have no basis of fact. They recognize that retirements of property, made necessary by the incidence of inadequacy or obsolescence, are not theories to be governed by accounting rules. They are facts for the recording

of which the accounting rules must provide. They represent an element of operating expense. If they occurred with uniform regularity, no reserve or suspense account for equalizing the effect of retirements would be necessary. They would be charged to operating expenses as they occurred. As they do not occur with uniform regularity, it was deemed desirable to have a reserve account and thus avoid having a disproportionate burden of retirement expense fall upon the operations of any one year.

The controlling elements in the equation are the actual retirements. The uniform system of the National Association provides that, as retirements are made, they shall be credited to capital account and concurrently charged against the retirement suspense account which, in the uniform classification, is entitled "Retirement Reserve" account.

The utilities will thus be able to record exactly what happens in the nature of property retirements and the provision made therefor, and the commission will be fully informed through the annual reports of the actual facts as to what has occurred during the accounting year in this regard.

The Reasons Why Retirements of Utility Property Take Place

As has been stated, *retirements are facts*. They occur either as the result of the growth of the business, which renders existing units of property inadequate, or as the result of improvements in the science of rendering utility service. Unless such improvements can be justified from a financial and economic point of view, they are not supposed to be made. The consideration of these problems constitutes one of the functions of the executive officials of utilities. They must be—and in fact may be—relied up-

on to make such improvements when conditions warrant it.

Such betterments are not matters of caprice. They are effected without disturbing the existing rates for the service. The question whether there is or is not a reserve has nothing to do with the matter. The method of accounting for these incidences of utility administration should be simple, direct and adequate, and nothing more.

Provision Need Be Made Only for Meeting the Actual Retirement Expenses

It will be seen, therefore, that the necessary provision in the operating expenses for the incidences of retirements must be governed by the actual retirements. If retirements are large, the provision therefor may not be small, and *per contra*, if the retirements are small the provision therefor should not be large. An accounting rule which provides that when anything is withdrawn or retired from service for any reason, the amount at which such thing stood charged in the capital account shall be credited to the capital account, and shall be currently charged to the retirement reserve to the extent that the total balance in the reserve is sufficient to cover such loss, and the balance charged to property abandoned account to be amortized out of future earnings, is all the accounting provision necessary to provide for the incidences of retirements.

With all the facts before it, the commission will be in a position to judge whether a utility is adequately, or inadequately, or more than adequately, charging against its earnings the cost of the retired property. That it should *adequately* do so is all that is necessary.

The Favorable Action of Many State Commissions

This uniform National Classification

of accounts; for gas and electric utilities, formulated by the accounting committee of the National Association of Railway and Utilities Commissioners, and recommended by the Association itself to the various state commissions, has already been adopted by more than twenty states, including New York State. The fight made, during the past two years, by the municipal radicals and socialists, against the adoption of this sound system in New York State was, I believe, their "last stand," and the National Classification will ultimately be adopted by every state. Its adoption by the state commissions will go a long way towards relegating to obscurity this absurd depreciation theory, which has survived a great deal longer than it would have done if those entrusted with administering the affairs of public service corporations had given the subject at the outset the close attention which it was their plain business to do.

The Fallacies of "Straight-Line" Depreciation

"Straight-line" depreciation is based upon false theories and assumptions and disregards the known and actual facts regarding the retirement of utility properties. It proves its own fallacies when subjected to intelligent scrutiny. It assumes that it is proper to charge the users of utility service for something they may never get, viz: the benefits which may result from retirements which may be made, some time in the distant future, in the interest of economy and efficiency. It assumes that plant and equipment wear out, which is not true. It assumes that losses due to retirements for obsolescence and inadequacy are not chargeable against those who *receive the benefit* of such retirements; that they should *not* be charged for what *they* get. It assumes that it is proper to accumulate huge reserves for the retirement of

property which can never be used for that purpose, and to this end to burden the rates paid by the public with fictitious expenses. It assumes that utility properties are like coal, oil, potatoes and flour and are similarly consumed, which, of course, is absurd. It assumes that there is constantly going on a consumption of capital for which the utility should be reimbursed through inflated charges to operating expense; that each unit of plant and equipment when installed contains an amount of service capacity based upon a guess as to its probable period of use; that every year some of that service capacity is consumed; that the capital is thereby impaired; that such impairment should be compensated for by charges to operating expenses and credited to a depreciation reserve; that the life of capital investment expires and that the utility must be compensated in the rates for this fact. It assumes, on the other hand, that whenever the rates of a utility are regulated there must be deducted from the utility's investment the entire amount accumulated in the depreciation reserve, if such amount be adequate, and if inadequate, the amount of theoretical depreciation which may be estimated to have accrued, computed by the so-called "straight-line" method.

The reasons why these assumptions are fallacious are very simple and elemental ones. The experience of public utilities is to the effect that there are practically no retirements for wear and tear. Were it not for the progress in the science of rendering public service, whether railway, gas, electric, or telephone service, resulting in the installation of improved and more efficient plant or equipment which can be operated with greater economy, and for the fact that the growth of these utilities is constantly resulting in the substitution of larger and more economical units for smaller units

of plant and equipment, there would be no retirements worth mentioning. Such retirements, when made, justify themselves on sound economic grounds. They produce economies against which the retirements could properly be charged.

The Reductions in Utility Rates Due Largely to Economies Effected by Property Retirements

The reductions in utility rates which have taken place during the past half century have, to a considerable extent, been made possible by this practice which has been constantly going on, of substituting larger and more economical units, or units of improved design or greater efficiency, for other units which at the time of their retirement were operating just as efficiently, and with just as much service capacity as when they were installed.

The average price received by The New York Edison Company for electric current in December, 1899, was 11.78 cents per kilo-watt hour. During the past year the average price received by the Edison and United Companies was 4.53 cents per kilo-watt hour. This reduction of 7.25 cents, in the average price, applied to the quantity of electric current sold by the Edison and United Companies during the past year, amounts to over \$94,000,000.

It would be plain nonsense to say that the capital invested in retired units was impaired or was being consumed, or that their service capacity was being diminished during the period they were in use. To have made such an assumption and to have burdened the users of the retired units, during the period of their use, with the cost of retiring them could not have been justified upon any tenable or sound economic theory.

To exact such charges would be a palpable imposition upon the user of the

service. He would be obliged to pay for something which he did not receive, viz., more efficient and more economical service rendered by the new units of plant or equipment.

The writing off of the investment in a substantial part of the plant or equipment of a utility, retired in order to obtain greater efficiency and economy, does not involve any increase in the rates charged for the service, since it is being effected through the annual provision for retirements and the economies realized from the operation of the more efficient and economic units of plant or equipment. Assuming the rates charged theretofore to have been only adequate for the maintenance of the retired plant and equipment and the return upon the investment therein, the cost of retired equipment could not have been collected from the users thereof during its life without increasing the rate charged for the service. The rates theretofore charged would, however, be adequate, after retirement, to write off, over a reasonable period of time, the investment in the retired equipment.

A Few Very Simple Considerations Which Are Fundamental to This Matter

Unlike human life, which is limited, the product of human energy may have perpetual life. The sphinx, the pyramids, celebrated obelisks, aqueducts, bridges and other structures, as well as statuary, jewelry and articles of personal and domestic use and adornment, have survived and will continue to survive for centuries. They represent nothing more than a rearrangement of indestructible matter. If Quintus Marius had constructed a gas plant or an electric plant instead of an aqueduct in 144 B. C., nothing but neglect would interfere with its operating today. And, even though

neglected, so much of the plant as consisted of steel, iron, concrete, stone, brick and mortar, which would represent nearly 100% of the cost, would remain in substantially its original form. Stephenson's second locomotive was still in use in 1911. The cast-iron water pipes leading from the river Seine to the fountains at Versailles, were installed in 1658, and the only repairs that have been necessary after two and a half centuries of service are the occasional replacing of bolts. Rome is still supplied with water by an aqueduct the construction of which was begun by Quintus Marcius in 144 B. C. Tunis is now supplied by an aqueduct built by Hadrian in A. D. 120. The aqueduct at Nimes has been in use for nearly twenty centuries. There are many other instances of masonry and concrete structures which have survived many hundreds of years of useful service.

It is idle, therefore, to talk about the life of a utility's plant and equipment. The only matter of interest is its maintenance in efficient service by repairs, and its improvement by renewals and replacements to keep abreast of the development in the science of rendering utility service and to meet the growing demands of an increasing patronage.

Almost every unit of plant and equipment has what is known as its wearing parts; like the grates and tubes of a boiler, the panels of a switchboard, the lining and checker-brick of a generator set, the rails and ties of a carrier and such small units as poles, meters, telephone receivers, wagons, and automobiles. The renewal and replacement of these wearing parts maintains the serviceability of the plant as a whole unimpaired. If the volume of business remained static and there were no improvements or economies to be realized from the displacement of units of ap-

paratus as a whole, or the regrading or realignment of sections of a carrier's roadway, the existing plant and equipment and roadway could be operated perpetually. It is neither necessary nor profitable therefore to attempt to guess when changes in the science or the growth of the business will afford opportunities for effecting economies by substituting other units of plant and equipment for those in use and thus reducing the cost of the service. Much less is there any necessity or excuse or economic justification for attempting to collect *in advance* from the users of the present plant and equipment the cost of substituting therefor, some day maybe, larger or more efficient units, involving the creation by the utilities at the expense of their patrons, of very large reserves which can never serve any useful purpose. To say that such a reserve, exacted from patrons, represents property *used up* is stupid nonsense.

It is always better to deal with facts than with guesswork, with actual expenses than with theoretical and largely fictitious expenses. Therefore, it being a matter of incontrovertible fact that nothing is being *used up* but the wearing parts of plant and equipment in rendering the service, it is self-evident that the patrons may not be charged for anything more than the cost of renewing such parts. If, every now and then, an entire unit of plant or equipment, which is in no sense *used up*, is displaced, for the benefit of the patrons, then is the time for the patrons to pay for it—until then they have no interest in the matter. They have no interest in the idle speculating and theorizing of uninformed persons, whatever their profession may be, especially when their "fundamental propositions" and "self-evident conclusions" are based upon a *mythical using up* of property.

The Bogus Formulae of the Depreciationists

In view of the foregoing facts, which are not matters of controversy at all, the argument advanced by the advocates of "straight-line depreciation," that a gas manufacturing plant, which has been in operation for fifty years and may remain in operation perpetually, is analogous to the materials and supplies used in the manufacture of gas, such as coal and oil, and that the plant and equipment are being consumed just the same as these materials are consumed, is not deserving of serious consideration. It will be observed that, as is usually the case when professional "straight-line depreciationists" are urging their bogus formula, they deal with such items of property as automobiles, meters, wagons, hand-tools, and similar minor units the expense of maintaining which, by renewals and replacements, is not such that provision for equalizing the annual cost thereof need be made in advance.

Concerning such items as this, it has been aptly said:

"The expense of maintaining by renewals and replacements such minor items of property, which may be said to be more or less perishable, is not such that provision therefor need be made in advance. Their withdrawal from service and from the capital account, which is not necessarily attended by any increase in efficiency or economy, creates an item of current operating expense, and should be treated as such."

Equally absurd is the professional confiscationist's theory that there is a liability due to ultimate retirement which should be shown on the utility's balance sheet, and that to fail to reflect this liability in a balance sheet statement would be as erroneous as to fail to state the accruing taxes or interest, which are not yet due but payment of which is inevi-

table. The fallacy of this is apparent when it is considered that there is in fact no liability in respect of future retirements which is not offset by the liability of the users of the service to pay for such retirements in the rates. No one questions that retirements are a proper charge to operating expense directly, or indirectly through a retirement reserve account. The only question arises as to when that liability occurs in respect of the user of the service. We believe that we have established beyond any peradventure that no liability accrues against the consumer until something has occurred by which he has benefited; in other words, until the retirement of plant or equipment, which has been superseded by more efficient plant or equipment, takes place.

Decisions of Courts and Commissions Rejecting Depreciation Theories

A few citations, if you care to look them up, will illustrate the extent to which these simple fundamental and controlling facts are becoming universally recognized by courts, commissions, economists, bankers, and utility managers, as well as by members of the legal, engineering and accounting professions.

Re Chicago Telephone Co. (Illinois Commerce Commission, Aug., 1923. 142 CL, page 481);

Bronx Gas & Electric Co., v. Pub. Serv. Comm. (P.U.R. 1923 A page 255);

Consolidated Gas Co., v. Newton (267 Fed. 231; affd. 258 U. S. 165);

New York and Queens Gas Co., v. Newton (269 Fed. 277; affd. 258 U. S. 178);

Re Alabama Power Co. (23 Rate Research, pp. 462, 469; P.U.R. 1923 B, p. 28);

Sandpoint v. Sandpoint W. & L. Co. (P.U.R. 1915 F, page 464, Idaho);

Wood River Power Co. (P.U.R. 1921 B, page 531, Idaho);

Pocatello Water Co. (P.U.R. 1915, F, page 436, Idaho);

New York State Railways (P.U.R. 1921 C, page 496, N. Y. 2nd Dist.);

Mineral Point Public Service Co. (P. U.R. 1919 A, page 795, Wisc.);

Medford Gas Co. (P.U.R. 1919 E, page 707, N. J.);

Re Grangeville E. L. & P. Co. (Idaho P.U. Comm.) 21 Rate Research, 20;

Re Mountain States Telephone & Telegraph Co. (New Mex. Corpn. Comm.) P.U.R. 1923 B, 352, 360, 362;

Re Consumers' Company (Idaho P.U. Comm.) P.U.R. 1923 A, 425, 427, 430;

Re Citizens Gas and Fuel Co. (Indiana Comm.) P.U.R. 1922 B, 854;

Campbell Bros. Water Co. (P.U.R. 1921 C, page 221 Idaho);

Monroe Gas Lt. & Fuel Co., v. Pub. Serv. Comm. (U. S. Dist. Ct. for Mich. Dist., Special Stat. Ct. decided April 1923 not yet reported.);

Arkansas Light & Power Co. (P.U.R. 1920 D, page 775 Ark.);

Public Service Comm. of Washington v. Pacific Power & Lt. Co. (P.U.R. 1920 F, pages 954-957);

Public Service Comm. of Washington v. Kelso Water Co. (P.U.R. 1919 E, page 206);

Pioneer Telephone & Telegraph Co. v. State of Oklahoma (167 Pac. 995);

People ex rel N. Y. Rys. Co. v. Pub. Serv. Comm. (223 N. Y. 373);

New York & Richmond Gas Co. v. Nixon (Sup. Ct. Richmond Co., N. Y. Jan. 11, 1921, App. dismd., App. Div., 2nd Dept. Oct. 6, 1922);

Murray v. Public Utilities Comm. (150 Pac. 57; P.U.R. 1915 F, page 436);

Milwaukee El. Ry. & L. Co. v. Milwaukee (P.U.R. 1918 E, page 1, Wisc.);

Arkansas Water Co. v. City of Little Rock (U. S. Dist. Ct. E.D. of Ark.; report of John E. Martineau, Special Master; confirmed by Dist. Ct. in Sept. 1923, not yet reported);

Landon v. Court of Industrial Relations (269 Fed. 433, 445);

Kansas City Southern Ry. Co. v. U. S. (231 U. S. 423);

Havre de Grace & P. Bridge Co. v. Towers (103 Atl. 319, P.U.R. 1918 D, page 484);

Cumberland Telephone & Teleg. Co.

v. City of Louisville (156 Fed. 823; 212 U. S. 414);

Ben Avon Borough v. Ohio Valley Water Co. (P.U.R. 1918 A, page 161; see also, 253 U. S. 287).

The Mistaken Teachings of Some Schools and Colleges

The foregoing disposes also of the theories once taught, and for all I know taught today, in an engineering college located not many miles from here. Students at this college have been taught that depreciation reserves should be accumulated on the straight-line theory, and that to fail to do so results in overstated earnings and in the payment of unearned dividends, and in balance sheets which do not disclose the utility's true status. These students have been taught, at the same time, that the property in which such reserves are invested is the property of the utility and not of the public, and that the accruals in the reserves do not constitute a repayment of investment and, therefore, may not be deducted from the assets in fixing the rate base.

All of which confirms the statement, which I have made before, that engineers and accountants do not, as a rule, understand the financial and economic problems presented by the incidence of plant retirements. Even college professors have gone astray, as in the case alluded to, and having done so, and having with the best of intentions promulgated illy digested, contradictory and irreconcilable theories, they pass into the incurable class. Their students have to *unlearn*, and they *do unlearn*, by experience and independent investigation, the things they have been taught.

The Fallacious Grounds on Which a Depreciation Reserve is Sought to be Justified

The professional confiscationist un-

dertakes to justify the creation of a reserve by assigning to it a useful purpose, viz., the renewal and replacement of property. Then he deducts the reserve from the cost of the property upon which a rate is to be computed, and thereby confiscates and destroys every dollar of it. Almost in the same breath he alleges the usefulness of a reserve and then discloses his own conviction of its absolute uselessness by utterly destroying it.

By this palpable chicanery, the professional depreciationists seek to deprive the utility of a fair rate through the confiscation of a part of its investment. Confiscation of the reserve is effected by eliminating from the entire investment so much of it as represents the reserve, and allowing a return only on the balance. Property devoted to the public service, when denied a return, is confiscated. No securities may be issued against such property in order to restore the reserve to a cash basis because there are no earnings from the property with which to pay interest on the securities. A reserve thus confiscated can never, therefore, be used for the purpose for which it was alleged to have been created.

The professional "depreciationist" disregards these obvious facts because he seeks an excuse for the application of his "depreciation" theory when his services are sought in rate cases. He wants to be in the position of saying, as was said in a recent commission decision:

"This reserve, set up by the company itself, is the company's own admission of an accrued depreciation."

His insincerity, to put it mildly, is disclosed by the fact that, by deducting his reserve from the investment, he confiscates and destroys it. The exploitation of his bogus formula is a matter of bread and butter to him. It is his means of livelihood. As a vocation it ranks in my opinion with selling gold bricks and

counterfeit money—sometimes known as "green goods."

The Tricks Resorted to by the Depreciationist

In other words, he resembles nothing as much as a trick circus performer pretending to ride two horses at the same time, which he is unable to do owing to certain vicious peculiarities possessed by each of them.

Likewise and for the same reason he is unable to ride either one for any length of time. One horse represents his depreciation theory in its crudest form with its "expired life," "consumed capital" and "impaired investment," which, of course, is too unsound to stand alone. He knows it. He knows that if the "investment" is "impaired," the investor must be shown to have been correspondingly reimbursed. If reimbursed, he must have collected the reimbursement under the guise of a depreciation reserve. He will be thrown in a moment.

Here he steps nimbly to the other horse. Why a depreciation reserve? Because it is necessary to anticipate the occurrence of renewals and replacements by providing a reserve against which the loss therefrom may be charged. When riding this horse, he evinces an almost tender interest in the investor and waxes indignant at the suggestion that he should not be permitted to collect, in advance, prospective losses due to obsolescence and inadequacy. He says nothing, while on this horse, about *deducting from the investment the amount reserved, which in effect confiscates and destroys it.*

And so, in presenting his theory, he rides first one horse and then the other, and is ready, if necessary, to divert the mind of his audience from too close a scrutiny of his performance, by doing

"ground and lofty" economic tumbling while juggling with such accessories as "the vanishing wood-pile," the "Ford car," and "the one horse shay"!

His performance differs not at all in its intent, but only in its spectacular features, from that of the "thimble-rigger" and the "three-card-monte man" and the other mountebanks who are pursuing their nefarious vocations outside of the big tent.

The probability that the imposition of his miserable theory would effect the wrecking of many utilities disturbs the depreciationist not at all.

"Maintaining the Integrity of the Utility's Assets"

One of the nonsensical purposes attributed to a "depreciation reserve," computed on the "straight-line" method, by its professional advocates, is that it would "maintain the integrity of the company's assets," and that without such a reserve, a utility company and its investors are not fairly treated. Again this "tender solicitude" for the company, which savors much of the solicitude of the cannibal for the victim he is fattening for a prospective feast!

The language which is used by the confiscationist to justify this claimed purpose of a "depreciation fund" will be found, upon close examination, to be vague and meaningless. A public utility's assets consist in the main of tangible property. This property suffers no loss of service value so long as it is properly maintained, and proper maintenance under commission regulation must be assumed. Until economic considerations justify the substitution of other plant or equipment for any of the units of plant and equipment in use, their value has sustained no loss except such as may result from a change in the level

of current prices of such plant and equipment below the prices originally paid therefor. Between the value of any unit of plant and equipment in service, functioning as efficiently as when it was installed, and the value of a new additional corresponding unit of plant and equipment installed in order to meet an increase in the demand for the commodity or service rendered, there would be no difference whatsoever. This also is elemental as well as fundamental and negatives the proposition that a reserve is necessary in order to maintain the so-called "integrity of the investment."

The Uselessness of a "Depreciation Reserve"

Under regulation, which assures adequate maintenance, the investment is none the less unimpaired because of the circumstance that there is not a dollar in any "depreciation reserve." On the other hand, the presence of a large depreciation reserve in a utility's balance sheet may amount to a vicious distortion of the facts and a rank misrepresentation of the company's actual financial status. It does not necessarily mean that any such reserve exists as a matter of fact. It may have been an actual reserve at some time in the past, but as the result of rate regulation, whereby the depreciation reserve has been deducted from the investment in determining the rate-base, and a return allowed only upon the balance of the investment, the reserve has been confiscated and its presence in the balance sheet is a palpable misrepresentation.

As I have already stated, to deprive property of earning power is to confiscate it for all practical purposes. The property may exist in tangible form and may be operated for the benefit of the public, but its value as an asset has

vanished. No securities may be issued against such property because the property earns nothing with which to pay interest upon the securities issued.

The reserve was accrued under the guise of providing for the replacement of very large units of property when replacement became necessary. It was invested in property which for the time being earned the same return as all other property.

Prior to the incident of regulation, the earnings of the property representing the depreciation reserve went to swell the surplus account. Had replacements taken place during that period of a very large amount of property, the funds would have been made available by capitalizing the investment in the property representing the reserve fund, restoring the depreciation reserve to a cash basis, and using the cash to pay for the replacement. As the property in which the depreciation reserve was invested was then earning a return, such return was available for the payment of interest on the securities issued. While such a transaction was possible before regulation, it would be impossible subsequently thereto.

The Depreciation Reserve and the Balance Sheet

The balance sheet, however, discloses none of this. The balance sheet, which is supposed to tell a true story, is misleading on its face. It tells a story of a reserve available for the replacement, if necessary, of a great volume of the company's property, which is a pure myth. It presents a financial structure, a large element in which is without any foundation. That a company survives under it is final and conclusive evidence that the reserve should never have been created.

Its only surviving purpose is a mis-

chievous one, viz., conveying an entirely false impression as to the utility's stability. Uninformed investors, and that means the bulk of them, look upon reserves as in the nature of segregated surplus, as a bulwark against any serious impairment of earning power.

As a matter of fact, the reserve was a menace to earning power when it really existed and it *ceased to exist* when the utility's earning power was impaired by its deduction from the rate-base.

These are facts so simple and elemental that there is little excuse for their being misunderstood by those in a position, either as managers or commissioners, to control more or less the destinies of public service companies.

The Consolidated Gas Company of New York and the subsidiary gas and electric companies which it finances, have never had a depreciation reserve. Nevertheless the credit of the Consolidated Gas Company is second to that of no other public service corporation in the country and it is able to finance its requirements and those of its subsidiary companies at as low a cost for money as does any other utility.

The Need for a Thorough Understanding of Corporate Accounting as well as of Corporate Finance and Economics

When I last had the honor of addressing you, I spoke on the subject of "The Financing of Public Utilities," and closed my remarks with a statement to the effect that the education not only of the financial officer, but of the company engineer and of the lawyer, is incomplete unless he has a clear understanding of the fundamentals of corporate accounting as well as of corporate finance and economics, and that without these he is unable to visualize, in the broad way in

which he should, the ultimate results of his own activities, either as engineer or counsel, especially when he has to deal with problems of valuation and capitalization.

The subject I have discussed this evening constitutes one of the fundamentals of corporate finance and economics, concerning which, as was then stated, not only the financial officer, but also the lawyers, engineers and accountants, should have a thorough knowledge.

The Constant Need for New Capital in the Utility Industry

When speaking of the capital requirements of public utilities, the question might very naturally arise as to the necessity for financial requirements. Why is it necessary to obtain funds through the issue of stocks, bonds, notes or other evidences of indebtedness? This is a very natural question. At a recent meeting of a board of directors of a public utility, when the matter providing for capital requirements by an issue of securities was presented for consideration, the question was asked by one of the directors: "When are we going to stop spending money for capital purposes?" Why not stop? The answer is that the business of the utilities throughout the country is a constantly growing one and the business grows not only because the communities grow, but because of the development in the utilization of the service of utilities. Some idea of this growth may be derived from a consideration of the growth of the gas and electric business of the Consolidated Gas Company and its affiliated gas and electric companies in the City of New York during the past ten years.

During this period there has been an increase of over 592,000 consumers of gas and electricity, or more than 50 per

cent. The sales of gas have increased 12,000,000,000 cubic feet, or over 41 per cent, and the sales of electric current have increased nearly 1,000,000,000 kilowatt hours, or more than 173 per cent.

The effect of the increase in the demand for electricity is found in increased transmission and distribution facilities; in other words, in additional house installations, including meters, additional wires and cables, additional subway ducts or overhead construction, sub-stations and sub-station equipment, additional generating capacity, which from time to time means additional generating plants.

Similarly in the gas department, the increase in the demand for this service resolves itself into additional appliances, meters, services, mains, holder-stations and manufacturing plants.

Budgets are made annually which forecast approximately the construction expenditures which will have to be made during a given year. In other words, the growth and development, due to the agencies referred to, being forecast, the additional facilities required for taking on the additional business and their estimated cost constitutes the budget.

These construction requirements are met temporarily out of such current corporate funds as may be available. As additional funds are required, they are obtained on temporary obligations in the form of time or demand notes. Periodically these temporary obligations are retired with the proceeds of an issue of stocks or bonds. With the close of the current year we will have obtained during the past five years, through the issue of stocks or bonds, sums aggregating more than \$105,000,000. The construction expenditures for gas and electric properties for the past ten years have aggregated about \$190,000,000.

The Tremendous Responsibility for Vigilantly Safeguarding These Investments

It need hardly be said that the obtaining of such funds from investors imposes a tremendous responsibility upon utilities to safeguard these investments in every conceivable way. In other words, the value of the property in which these funds are invested must be fully maintained. This is effected as I have explained by writing off from capital account against earnings all property withdrawn from service. It is deemed that the investment in any item of plant and equipment remains unimpaired as long as it is in service and until it is retired from service.

An illustration of the interest taken in this subject by those most vitally concerned, viz., the trustees under mortgage bonds, is indicated by the provision in the last open-end mortgage put upon the property of The New York Edison Company, securing an initial issue of thirty million dollars of bonds, to which reference was made in my previous address. In this mortgage the Edison Company covenants as follows:

"So long as any of the bonds remain outstanding and unpaid, the company will at all times maintain, preserve and keep, or cause to be maintained, preserved and kept, its real estate, plants and distributing system, and the real estate, plants and distributing system of each of its constituent companies, in thorough repair, working order and condition, and will, from time to time, make or cause to be made any and all needful and proper repairs thereto and renewals and replacements thereof, so that at all times the value of the mortgaged properties shall be fully maintained; and the company will at all times use and apply, or cause to be used and applied, for that purpose, so much of the revenue of the properties mortgaged as may be required."

It is quite obvious from the language of this provision that the trustee under the mortgage, who stands between the company and the bond-holders, is satisfied that if replacements are made if and when property is retired, not necessarily in kind, but of at least equivalent value, the integrity of the investment is preserved—in other words, that it is unimpaired.

The Assurance to Which Investors Are Entitled

It would seem fairly elemental that the investors in the securities of a utility should have this assurance, or that at least they should have the assurance that the property in which their money is invested shall be subject to no variation in value other than what is attributable to a change in the price level. A change in the price level affects the value of all property. As the price level goes up the values go up, and *vice versa*. There is, however, another element in the equation which operates to neutralize the effect upon the value of property of a change in price level and that is the purchasing power of the dollar. Invariably a low purchasing power of the dollar is attended by a high price level and a high purchasing power of the dollar is attended by a low price level. With a fixed rate of return upon the value, in either case, the amount earned when the value is low and rates are adjusted to the low value has a purchasing power as great as the greater amount earned when the value is high and rates are adjusted to the high value.

The Significance of a Return upon "Present Value"

For example: the purchasing power of the dollar has recently been, approximately, 61 cents; therefore, property acquired when the purchasing power of

the dollar was 100 per cent and having a normal or original investment value of \$100 would have a present value of, say, \$163.91. A return of 7 per cent on this amount would equal \$11.47. But the purchasing power of \$11.47 based upon present purchasing power of the dollar is only \$7.

Likewise, if the purchasing power of the dollar was, say, \$1.25, property which cost \$100 when the dollar was at 100 per cent would have a present value of \$80; 7 per cent upon this would be \$5.60. But the purchasing power of \$5.60 based upon such purchasing power of the dollar would be \$7.

If, however, original cost is taken for the purpose of fixing rates, with the purchasing power of the dollar at 61 cents, and a 7 per cent return is allowed, it is obvious that this return actually has a purchasing power of only \$4.27.

Present Replacement Cost the Controlling Factor in Present Value

In determining the validity of a rate alleged to be confiscatory, the court must consider the reasonable rate of return on property as well as the value thereof. If justice is to be done, either the rate of return or the value must be considered from the standpoint of purchasing power of the dollar. In view of the confusion arising from an ever-changing rate of return involved in the adoption of the normal or original investment value as the rate base, the United States Supreme Court did wisely in deciding in favor of present reproduction cost as the controlling element in determining the value of utility property.

The decision referred to confirms the soundness of the reasoning on this subject, of the opinion filed by Judge Learned Hand of the United States District Court in the *Consolidated Gas Company* case, as well as a number of

recent decisions by Federal and State courts and of the commissions in this and other states. In his opinion, which I wish I had time to quote to you in full, upon the valuation and depreciation questions, Judge Hand said:

"A profit based upon the enhanced value of the capital adds nothing to the company's wealth. Though its capital be measured in more dollars and so, too, its profit, that profit is still paid in the fallen dollar and has no greater buying power than it had before. The increased valuation of the capital will for the years of the depreciated dollar leave the company exactly as it was; it will merely prevent its being compelled to share its putative fair profit with its customers, which by hypothesis it should not be asked to do. The company gains nothing, the customers lose nothing."

The Preservation of the Actual Investment Unimpaired

As I have already said, however, the main and vital point to keep in mind is the preservation unimpaired of the actual capital investment. This is the big and all-important thing. It cannot be over-emphasized. Nothing should affect it but the price level. Nothing should be accepted or practiced in the nature of accounting rules or theories which threaten, ever so indirectly or remotely, the capital account.

In this connection, it is well to remember that the exercise of the function of rate regulation involves a determination, on the part of the regulatory body, of the so-called "rate base"—in other words, of the amount upon which the utility is entitled to earn a return. The United States Supreme Court has ruled that the rate base shall be the "present value" of the property. But the court has not yet declared a definitive rule for the ascertainment of present value. As a result there have been a great variety of methods employed by tribunals

throughout the country for determining present value. Many of them differ fundamentally from each other.

The Results of an Apparent Lack of Agreement Between the Utilities Themselves

Much of the confusion resulting from conflicting decisions has been clearly due to the manner in which the utility side of the case has been presented. The study of these cases reveals the absence of a real accord or agreement between the utilities themselves as to the fundamental economic principles which should control the determination of this most vital question—vital not only to the utility immediately concerned in the particular case, but also to the entire utility industry and its investors. No rate controversy of a utility is so small, so remote, or so unique in its facts, that its sound presentation and right decision is not of vital importance to our whole public service industry. A bad decision in a water-power or water-right case in Arizona may influence the next decision rendered in a gas or an electric rate case in Maine. These decisions are all spread broadcast throughout the country through one channel or another. Any ruling on a question of valuation is likely to have a far-reaching effect.

Hence the real mutuality of interest, which, however, is largely ignored by those who should be striving for better coordination, and for the observance by every tribunal of the sound fundamental principles which must prevail if there is not to be a wholesale wrecking of utilities through the ultimate acceptance of false theories of valuation.

The Effect of a Lack of Interest on the Part of Utility Executives

The trouble has been, and is, that, in many cases, these valuation questions

have apparently engaged but little of the attention and earnest thought of utility executives. They appear to have been given but casual consideration and to have been left too often to the untrained lawyer, engineer, statistician and accountant. There is little evidence that the latter have been selected because of their understanding of these subjects, or that they have performed their duties under the guidance and direction of informed and vigilant executives. In their preparation of a case for presentation in court or before a commission the lawyers and accountants have been too often left to work the matter out the best they knew how. Experts have been employed who, by reason of their commitment under oath in previous cases to false theories, had no business to be entrusted with the destinies of any utility in such a crisis. Engineers employed by the utilities have testified to depreciated values without knowing what they were talking about. The lawyers, lacking in independent thought upon the subject, have followed what seemed to be the easiest course and trailed after the uninformed expert, engineer and accountant. All of which has made it easy sledding for their radical opponents.

As a result decisions have been rendered which are a menace to the entire utility industry. Such decisions have been cited and quoted repeatedly as controlling and adverse authorities, in cases where these false theories have been bitterly fought by utilities that understood their business and knew how to present their cases.

The Fundamental Difficulty

The trouble which is at the bottom of the whole matter is that, with some exceptions, the utility lawyers, engineers, statisticians and accountants, as well as

executives, have not thought the matter out. They have not visualized the consequences of temporizing with a plausible but dangerous theory. They have not realized that by accepting the theory of straight-line depreciation, and by inflating their expenses, thereby creating a reserve, which produced cash available for capital purposes, they were selling their birthright for a mess of pottage—their birthright being their right to have their investment deemed to be unimpaired by any theory of expired life expectancy. Many of them have realized this when it was too late. They have realized it when, in rate cases, there has been deducted from their investment many times the reserve they had accumulated. Such deductions have been justified in the language of their tribunal by the circumstances of their own acceptance of the theory. Some of them, when this has occurred, have not really understood what has happened to them: Their earnings have been drastically reduced, but just how, and the extent to which they themselves have contributed to it, they fail to understand. Their incapacity for taking care of themselves has been pathetic.

The Duty of Utility Lawyers, Engineers and Accountants

If responsibility for safeguarding the investments in utility properties is to continue, as in the past, to devolve mainly upon the legal representatives of utilities and upon the engineering and accounting staffs, then it behooves these gentlemen to get very busy and make the subject of valuation the study of their lives. They should do it in any event in order that when they in turn become executives they will have thoroughly mastered all the intricacies of this very important subject and be prepared, when occasion demands, to go on the firing line in defense of

their properties in whatever kind of proceeding the value of their properties may be in question.

By so doing, they will protect those who have invested in their securities. The investor has a right to expect that they will do this and do it understandingly.

The Warfare Against Private Property

Although much has been accomplished towards the elimination of false theories in utility valuation, much remains to be accomplished towards the establishment of those sound and equitable principles which must in the end govern the determination of the value of all property.

As has been said of a certain much advertised nostrum, the radicals "work while you sleep." Furthermore, they are a unit in the pursuit of a very definite object, namely the destruction not only of property values but of the very institution of private property. Utility property first and industrial, commercial and individual property next. They are going right ahead with their program of confiscation in Congress, in State Legislatures, in many municipal administrations, especially that in New York City; they are busy circulating poisonous propaganda and disseminating false and vicious doctrines.

The Task of Common Defense

In the front trenches of the line of defense stand the public service companies. This line is sadly in need of strengthening. There has been altogether too much temporizing with the subject of depreciation on the part of many of those responsible for the safeguarding of billions of dollars of investors' money—too much "passing of the buck" to somebody else and cloaking mental incapacity for dealing with the subject by treating it as more or less of a joke—too much evidence of individual ineptitude for

dealing with this and other problems presented by the incidence of commission regulation and the incessant clamor on the part of a radical minority for public ownership. It is high time for the utility executives, investors, lawyers, engineers, and accountants to inform their minds, settle any differences of opinion, and present a solid and invincible front to the common enemy.

Let it be remembered, furthermore, that the attack upon values is not confined to utilities alone. Such reckless legislation, for example, as was passed at the last session of the legislature of this state, to say nothing of the legislation that was attempted, sounds a note of warning to all classes of industries and to all owners of property, because they can by no means, in the long run, escape its effects, be their properties large or small, real or personal, whether represented by a title deed or a mortgage bond or a share of stock or an insurance policy or a savings bank account.

Those who wage war on private prop-

erty in the United States know no party, no church, no political, social or religious restraint. They will show no mercy and grant no immunity. They are ruthless and untiring. They know exactly what they want and how to work for it. They brush aside anything and everything which stands in their way.

This destructive campaign can be resisted and defeated only by concerted action in the common defense. All that is another story, however, and I have already talked longer than I intended; so, in closing, I merely urge upon you, at this time, that whenever opportunity offers for you to identify yourself with any militant movement for the protection of property rights in America, you should avail yourselves of it, in disregard of any partisan considerations, and give the full weight of your vote and your influence to the preservation of the fundamental rights guaranteed to individuals and to property by the Constitution of the United States.

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The Charge of the Light Brigade

Public Service Corporation of New Jersey, in a statement just issued, reports that its subsidiaries, Public Service Gas company and Public Service Electric company, have passed the million mark in the number of gas and electric meters now in use. This is the greatest number in the history of the corporation. Figuring on the basis of two meters, one gas and one electric for each book customer, and comparing the last census, Public Service of New Jersey now counts as a gas and electric customer a minimum of every sixth person in New Jersey.

Associations Affiliated with A. G. A.

Canadian Gas Association

Date of affiliation—Mar. 25, 1919.
 Pres.—C. A. Jefferis, 265 Front St., E., Toronto, Ont., Canada.
 Sec.-Tr.—G. W. Allen, 7 Astley Avenue, Toronto.
 Conv., 1924.

Empire State Gas and Electric Association

Date of Affiliation—Nov. 21, 1919.
 Pres.—M. J. Brayton, Utica Gas & Electric Co., Utica, N. Y.
 Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
 Annual Meeting, 1924.

Illinois Gas Association

Date of Affiliation—Mar. 19, 1919.
 Pres.—Robert B. MacDonald, Peoples Power Co., Moline, Ill.
 Sec.-Tr.—R. V. Prather, 305 Illinois Mine Workers Bldg., Springfield, Ill.
 Conv., Hotel Sherman, Chicago, Ill., March 26, 27.

Indiana Gas Association

Date of Affiliation—April 24, 1919.
 Pres.—L. Fitzgerald, Gary Heat, Light & Water Co., Gary, Ind.
 Sec.-Tr.—E. J. Burke, Citizens Gas Co., Indianapolis, Ind.
 Conv., West Baden Springs Hotel, West Baden, May 5, 6, 1924.

Iowa District Gas Association

Date of Affiliation—May 21, 1919.
 Pres.—Charles Smith, Yankton Light & Heating Co., Yankton, S. D.
 Sec.-Tr.—H. R. Sterrett, 551 Seventh St., Des Moines, Ia.
 Conv., 1924.

Michigan Gas Association

Date of Affiliation—Sept. 18, 1919.
 Pres.—Geo. H. Waring, American Public Utilities Co., Grand Rapids, Mich.
 Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
 Conv., 1924.

Missouri Association of Public Utilities

Date of Affiliation—June 18, 1920.
 Pres.—H. C. Blackwell, 1330 Grand Ave., Kansas City, Mo.
 Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
 Wiley F. Cori, Chmn., Affiliation Com., Missouri Utilities Co., Mexico, Mo.
 Conv., 1924.

New England Association of Gas Engineers

Date of Affiliation—Feb. 19, 1919.
 Pres.—C. E. Paige, C. H. Tenney & Co., Boston, Mass.
 Sec.-Tr.—J. L. Tudbury, 247 Essex St., Salem, Mass.
 Conv., Copley-Plaza Hotel, Boston, Feb. 13-14, 1924.

Gas Sales Association of New England

Date of Affiliation—Oct. 1, 1919.
 Gov.—F. A. Woodhead, 689 Massachusetts Ave., Arlington, Mass.
 Sec.—J. H. Sumner, 719 Massachusetts Ave., Cambridge, Mass.
 Annual Meeting, 1924.

New Jersey Gas Association

Date of Affiliation—April 25, 1919.
 Pres.—James P. Hanlan, Public Service Gas Co., Newark, N. J.
 Sec.-Tr.—R. A. Koehler, Public Service Gas Co., Newark, N. J.
 Conv., Bellevue-Stratford Hotel, Philadelphia, April 9-10, 1924.

Pacific Coast Gas Association

Date of Affiliation—Sept. 18, 1919.
 Pres.—H. R. Basford, H. R. Basford Co., San Francisco, Cal.
 Sec.-Tr.—W. M. Henderson, 812 Howard St., San Francisco, Cal.
 Conv., Santa Barbara, Cal., Sept., 1924.

Pennsylvania Gas Association

Date of Affiliation—April 10, 1919.
 Pres.—Grier Herah, York Gas Co., York, Pa.
 Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
 Conv., Bellevue-Stratford Hotel, Philadelphia, April 9-10, 1924.

Southern Gas Association

Date of Affiliation—May 20, 1919.
 Pres.—E. L. Richa, 1602 Lexington Bldg., Baltimore, Md.
 Sec.-Tr.—E. D. Brewer, 75 North Mayson Ave., Atlanta, Ga.
 Conv., Bon-Air Vanderbilt Hotel, Augusta, Ga., April 22-24, 1924.

Southwestern Public Service Association

Date of Affiliation—September 26, 1923.
 Pres.—J. H. Gill, Dallas, Texas.
 Sec.—E. N. Willis, 403 Slaughter Bldg., Dallas, Texas.
 Conv., New Orleans, La., April, 1924.

Wisconsin Utilities Association

Date of Affiliation—March 25, 1919.
 Pres.—Harold L. Geise, Wisconsin Valley Electric Co., Wausau, Wis.
 Exec.-Sec.—J. N. Cadby, 445 Washington Bldg., Madison, Wis.
 Conv., Hotel Pfister, Milwaukee, Wis., April 17-18, 1924.

Geographic Divisions

Eastern States Gas Conference

Date of Formation—April 11, 1923.
 Pres.—F. H. Gadsden, The United Gas Improvement Co., Philadelphia, Pa.

Sec.-Tr.—L. R. Dutton, Philadelphia Suburban Co., Jenkintown, Pa.
 Conv., Bellevue-Stratford Hotel, Philadelphia, April 9-10, 1924.

GENERAL

CHAIRMEN OF GENERAL COMMITTEES ORGANIZED TO DATE

Accident Prevention—F. W. FISHER, Rochester, N. Y.
 Amendments to Constitution—WM. J. CLARK, Mt. Vernon, N. Y.
 American Engineering Standards Committee, Representative on—A. H. HALL, Cambridge, Mass.
 —(Alternate Representative) W. J. SMAILL, Philadelphia, Pa.
 Award of Beal Medal—J. B. KLUMPP, Philadelphia, Pa.
 Chamber of Commerce—R. B. BROWN, Milwaukee, Wis.
 Cooperation with Educational Institutions—W. G. GRIBBEL, Philadelphia, Pa.
 Customer Ownership—CHAS. A. MUNROE, Chicago, Ill.
 Education of Gas Company Employees—B. J. MULANEY, Chicago, Ill.
 Finance—JAMES LAWRENCE, New York, N. Y.
 Gas Code—W. R. ADDICKS, New York, N. Y.
 Gas Standards and Service—R. B. HARPER, Chicago, Ill.

National Fire Protection Association—R. S. DOULL, New York, N. Y.
 Nominating—H. A. NORRIS, Boston, Mass.
 Rate Fundamentals—R. A. CARTER, New York, N. Y.
 Representation on National Joint Committee of Public Utility Associations—D. D. BARNUM, Boston, Mass.; R. B. BROWN, Milwaukee, Wis.; R. A. CARTER, New York, N. Y.; H. L. DOHERTY, New York, N. Y.; A. FORWARD, New York, N. Y.; C. H. GARY, Philadelphia, Pa.; J. B. KLUMPP, Philadelphia, Pa.; A. P. LATHROP, New York, N. Y.; CHAS. A. MUNROE, Chicago, Ill.
 Standard Gas Appliance Specifications—W. T. RASCH, New York, N. Y.
 United States National Committee of International Commission on Illumination, Representatives on—HOWARD LYON, Gloucester, N. J.; E. H. EARNSHAW, Newark, N. J.; G. G. RAMSDELL, New York, N. Y.

Our 1923 Business

SALES OF MANUFACTURED GAS during 1923 by the public utility companies of the United States will run between 365 and 375 billion cubic feet. This establishes a new high record for gas consumption and represents an estimated increase over 1922 of about 20 billion cubic feet.

At the present time new customers are being added to service mains at a rate in excess of 400,000 a year, with annual sales of appliances aggregating 750,000 ranges, 425,000 water heaters and 400,000 space heaters. Sales of merchandise by gas companies are also continuing at a high rate, the estimate for last year being in the neighborhood of \$45,000,000 or approximately \$5.00 a meter.

One of the principal factors responsible for the greatly increased sales of gas is

the growing demand for the product in industry where gas is now used in more than 5,000 separate and distinct ways, with an increased consumption during the last ten years of 1,000 per cent. Companies are also making house-heating installations at the rate of about 10,000 a year and in some sections of the country are making a large number of gas refrigeration machine installations.

In order to keep up with present and accumulated demands for service, the gas utilities financed a \$450,000,000 building and expansion program in 1923, and this sum is expected to be materially increased in 1924. Reports filed by our members show that the industry is enjoying the greatest expansion in its history, with the new year promising no let up in demands for service.



In Memoriam—George Beadenkopf

GEORGE BEADENKOPF, Chief Engineer, Gas Operations, Consolidated Gas, Electric Light and Power Company of Baltimore, died suddenly on Christmas night. Death resulted from a stroke of apoplexy.

Following a family dinner at the home of his daughter, Mrs. Walter E. Atkinson of Glyndon, Md., Mr. Beadenkopf had called on an old friend at Glyndon, where for many years he had a summer home. The friend is blind and Mr. Beadenkopf described to him in his happy way some of his experiences during a recent tour of South America. In apparent health and in the best of spirits he left for his daughter's home where he died suddenly.

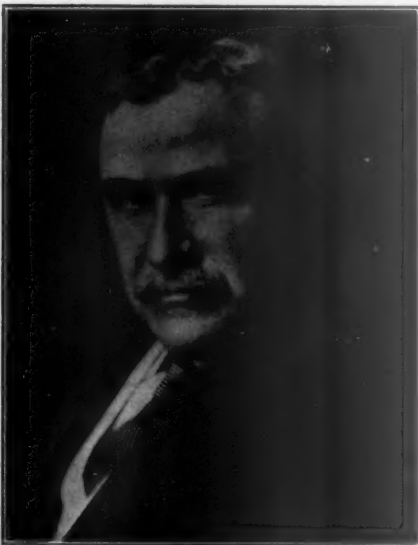
Mr. Beadenkopf had been with the Consolidated Gas, Electric Light & Power Company 45 years; nearly half a century devoted to the manufacture, distribution and utilization of gas. He was a Baltimore product. Born in this city in 1857, he entered the Engineering Department of the Consumers' Mutual Gas Light Company in 1878 in a minor capacity. Through application, industry and imagination, he rose by successive steps to become Chief Engineer of Gas Operations of the company.

Mr. Beadenkopf first worked under the direction of the late Francis H. Hambleton, who was Engineer of the Consumers' Mutual Gas Light Company from 1877 to 1880 and Engineer of the Consolidated Gas Company from 1880 to 1902 and Consulting Engineer from 1902 to 1910.

Mr. Beadenkopf became Assistant Engineer, Consolidated Gas Company, in 1883, continuing in that capacity until 1902. From then until his death he had been Engineer and Chief Engineer of the Consolidated Gas, Electric Light and Power Company.

Mr. Beadenkopf's life and work are interwoven with every phase of the planning, construction and operation of Baltimore's gas system. He, with Mr. Alten S. Miller, who was Vice-President and General Manager of the Consolidated Company from 1902-1909, was responsible for the building of the modern gas plant at Spring Gardens. The present plants and the distribution system are the work of Mr. Beadenkopf, and the engineers who had the rare privilege of working with him and benefiting by his comprehensive knowledge, his wise judgment which grew out of his wide experience, and his thoroughness.

Not only does the Baltimore Company suffer a great loss in his sudden death, but the whole gas industry, in which he was widely known for his ability, and loved for his character, suffers a distinct loss.



Affiliated Association Notes

Empire State Gas and Electric Association

The annual meeting of the Gas Section, Mr. W. H. Earle, Chairman, of the Empire State Gas and Electric Association will be held in Binghamton, N. Y., on March 6 and 7 with headquarters at the Arlington Hotel. The meeting will open at 10:00 a. m., March 6, with an informal question box in which questions submitted in advance will be answered. Various members will follow with brief statements covering the past year's progress of the gas industry in New York State. After the noon luncheon the following program will be presented: "Public Relations," speaker to be announced; "Fuel Situation in Relation to New York State Gas Industry," by Mr. W. M. Carpenter; "Backrun Gas," by Mr. Smith and Mr. Cooper; "Cast Iron Pipe Joints," speaker to be announced; "Description of Gas Demand Meter," by H. C. Deffenbaugh.

The session on March 7 will start at 10:00 a. m. with a brief discussion on the operation of water gas sets with a checkerless carburetter, followed by a discussion of labor-saving machinery, particularly in gas distribution work, by J. K. Crowell of Yonkers, and a discussion of house-heating by gas by J. B. Allington. The members will be divided into three groups for luncheon and discussion on the following subjects: "Standardization of Distribution Practice," "Developments in Connection with Industrial Use of Gas," and "Automatic Controls for Water Gas Sets and Holder Heating Problems."

Local arrangements for the meetings, luncheons and entertainment features will be in charge of Mr. F. F. Ingwall.

Gas Sales Association of New England

Approximately 250 were present at an enthusiastic dinner meeting of the Gas Sales Association of New England at the City Club, Boston, Mass., on January 11. This meeting was arranged by and held in cooperation with the Industrial Gas Class of N. E. Mr. F. A. Woodhead, Governor of the Sales Association, presided at the meeting. The speakers and their topics were as follows: Mr. K. R. Boyes, "Activities of the American Gas Association"; Mr. S. D. MacQuarrie, "New England Bureau of Public Service Information"; Mr. C. E. Paige, "Gas Industrial Educational Work at Massachusetts Institute of Technology," and Mr. H. O. Loebell, "The Many Uses to which Industrial Gas Can be Applied." Mr. Woodhead announced that the Association would publish Mr. Loebell's paper in pamphlet form.

Affiliated Association Notes

Iowa District Gas Association

Sioux City, Iowa, is the place and April 16, 17 and 18 the time of the 1924 Convention of the Iowa District Gas Association. Mr. H. J. Carson of Cedar Rapids is Chairman of the Program Committee; Mr. C. A. Nash of Davenport, Chairman of the Publicity Committee; and Mr. H. R. Stephenson, of Sioux City, Chairman of the Entertainment Committee. Mr. H. R. Sterrett, Secretary-Treasurer, guarantees this meeting to be the biggest and best in the history of this Association.

Southern Gas Association

President Edward L. Richa of the Southern Gas Association announced that the sixteenth annual meeting will be held in Augusta, Ga., April 22, 23 and 24, with the Bon-Air Vanderbilt Hotel as convention headquarters. The Papers Committee, with Mr. Alan D. Whittaker of Atlanta, Ga., as chairman, is hard at work in preparation of a program even exceeding the usually fine convention programs of this Association in interest and entertainment.

New England Association of Gas Engineers

The program for the convention of this Association to be held at the Copley Plaza Hotel, Boston, on Feb. 13 and 14, is as follows: Address, Hon. H. G. Wells of the Massachusetts Public Utility Commission; Reports from American Gas Association Committees; "Continuous Property Inventory," A. J. Smith; "Tar," J. H. Read, Jr.; "Gas Company Merchandising," J. J. Quinn; "Back Run Gas," E. H. Bauer; discussion of the following: "Interior Corrosion in Holders," "Results of Liquid Purification," "Results of Changes in Methods of Charging for Gas," "What Does Your Steam Cost in Boiler House," "Appliance Sales per Meter," "Life of Street Mains in Cities," and "Gas Company Insurance."

It has been decided to omit the annual banquet and hold an entertainment and dance in its place. The committee having in charge the entertainment features of the convention consists of C. T. Aaron, chairman, G. W. Stiles, and E. H. Bauer.

April—Convention Month

The month of April is going to be a busy one for conventions since five of the affiliated associations have chosen that month. The Eastern States Gas Conference, which includes the New Jersey Gas Association and the Pennsylvania Gas Association, starts the series of meetings in Philadelphia on April 9 and 10. The Iowa District Gas Association follows with a convention in Sioux City, Iowa, on April 16, 17 and 18. On April 17 and 18, the Wisconsin Utilities Association holds its annual convention in Milwaukee, Wisconsin. The big yearly meeting of the Southwestern Public Service Association is to be held this year in New Orleans, La., on April 22, 23, 24 and 25. Augusta, Ga., is scheduled to entertain the Southern Gas Association on April 22, 23 and 24. All in all, April promises to be interesting for the gas man!

ACCOUNTING SECTION

W. A. SAUER, Chairman

H. C. DAVIDSON, Vice-Chairman

H. W. HARTMAN, Secretary

MANAGING COMMITTEE—1924

ARMSTRONG, J. J., Toronto, Can. (Canadian)
 BARTON, W. H., Portland, Ore.
 BISSELL, J. H., Boston, Mass.
 BLANCHFIELD, J. J., Brooklyn, N. Y.
 CLINTON, DEWITT, Worcester, Mass. (N. E. Gas Eng.)
 DOERING, W. A., Boston, Mass.
 FRY, E. F., Allentown, Pa.
 HAAS, EDWARD, Milwaukee, Wis. (Wisconsin)
 HALL, I. S., Boston, Mass.
 HEINS, J. W., Philadelphia, Pa.
 HOFFMAN, F. O., St. Paul, Minn.
 JAMES, F. M., Aurora, Ill. (Illinois)
 JAMES, W. H., Petersburg, Va. (Southern)
 KELLER, A. R., Syracuse, N. Y.
 KURTZ, ADAM, Detroit, Mich. (Michigan)
 LAWALL, H. J., Philadelphia, Pa.
 LAWRENCE, JAMES, New York, N. Y.
 MEYERS, W. J., New York, N. Y.

MURFIT, W. G., Newton, Pa.
 PACE, HOMER, Charleston, S. C.
 PATTERSON, F. H., Rochester, N. Y.
 PATTES, W. H., Newark, N. J. (New Jersey)
 PHILLIPS, E. E., Lincoln, Neb. (Iowa)
 POTTER, EDWARD, Philadelphia, Pa. (Pennsylvania)
 POTTER, C. F., Newark, N. J.
 REESE, J. O., Baltimore, Md.
 REYNOLDS, A. E., Springfield, Mo. (Missouri)
 SCHMIDT, WM., JR., Baltimore, Md.
 SCOTT, J. M., Wilmington, Del.
 SHARLE, A. A., New York, N. Y.
 SHORT, A. F., Providence, R. I.
 TOSSELL, A. L., Chicago, Ill.
 TRACY, F. B., Muncie, Ind. (Indiana)
 WILBUR, A. A., Brockton, Mass. (Gas Sales of N. E.)
 WINTERS, A. C., Chicago, Ill.

CHAIRMEN OF SECTIONAL COMMITTEES ORGANIZED TO DATE

Analysis of Gas Company Statistics—H. J. LAWALL, Philadelphia, Pa.

Budget—F. H. PATTERSON, Rochester, N. Y.

Customers Accounting—H. J. FRY, Allentown, Pa.

Insurance—J. G. REESE, Baltimore, Md.

Nominating—J. W. HEINS, Philadelphia, Pa.

Relations With Customers—DEWITT CLINTON, Worcester, Mass.

Improving Relations Through Employees Visiting Customers' Premises—W. H. BARTON, Portland, Ore.

Errors, Their Correction and Prevention—J. M. ROBERTS, Chicago, Ill.

Security Holders' Records—E. MACMORRIS, Philadelphia, Pa.

Welfare Systems—O. F. POTTER, Newark, N. J.

State Representatives and Contributions to Monthly—A. L. TOSSELL, Chicago, Ill.

Uniform Classification of Accounts and Form of Annual Report to Public Service Commissions—W. J. MEYERS, New York, N. Y.

Uniform Classification of Accounts for Gas Corporations

H. W. HARTMAN, Secretary, Accounting Section

IN NOVEMBER 1920 the convention of the National Association of Railway and Utilities Commissioners recommended that all state commissions adopt the Uniform Classification of Accounts for Gas Corporations that had been prepared by their committee on Statistics and Accounts in collaboration with similar committees of the N. E. L. A. and A. G. A. From that date, November, 1920 to February, 1924, fifteen state commissions have adopted the classification and required companies in their jurisdiction to keep their accounts in accordance therewith.

Viewed in the light of the difficulties

always attending any effort at national standardization of accounts, this is a remarkable achievement. But it is not the purpose of this article merely to congratulate ourselves on the achievement to date. The results obtained have been made possible through the untiring efforts of the A. G. A. Committee on Uniform Classification of Accounts in collaboration with local accountants and local gas associations and has entailed much work on the part of individual members of that committee in attending meetings of local committees, appearances before public service commissions, etc.

In the opinion of the members of the Managing Committee of the Accounting Section the extent and importance of this work has not been sufficiently brought to the attention of the association membership at large nor are the local accountants in the states where the classification has not been adopted sufficiently conscious of the value of national standardization to be as active as they should to secure the adoption of the classification by their own commission.

We will, therefore, in this article attempt to trace the development of the classification toward adoption, the extent to which it already affects the entire industry, the present plans of the committee for its further adoption and the means whereby the local gas companies and gas associations can cooperate with the A. G. A. committee in furthering this work.

Uniform Accounting Always an Ideal

Since the very inception of gas association work it has been a time-honored pursuit of the accountants to nationally unify classifications of accounts. As a result of the earliest work on this subject on October 15, 1902, a committee of the American Gas Light Association presented at its thirtieth annual meeting in New York City, a uniform system of accounts for gas companies which was adopted and handsomely bound in leather for distribution to the members.

On January 1, 1907, the American Light and Traction Company published a Revised Classification of Financial Report for the McMillin Companies which was based on the former classification.

When the American Institute was formed the ideal of uniformity in accounting was still uppermost in the consideration of the accountants and managers of gas properties and on the recommendation of the Public

Policy Committee, a committee was appointed to revise and compare the old uniform system of accounting adopted by the American Gas Light Association with all uniform systems of accounting in use by the several state commissions. This resulted in the adoption in September, 1914 of a uniform system of accounts for gas companies prepared by the above committee, which was submitted as harmonious with the systems adopted by the various utility commissions and which was adopted by the American Gas Institute and again distributed to the members.

This twenty years' devotion to our ideal was not a matter of accidental selection. It arose from a sincere and universal conviction on the part of the industry that uniformity in accounting was not only practical but one of the most desirable consummations that could be brought about in public utility accounting. That it failed of any practical application up to the time of the formation of the American Gas Association was not due to any lack of conviction but to the lack of proper machinery for reconciling slight differences of opinion on details and for securing the united cooperation and agreement of the regulatory bodies in each state.

A. G. A. Action on Uniform Classification

It was with considerable trepidation, therefore, that the first Accounting Managing Committee considered what action should be taken on the adoption of a uniform classification of accounts. It was decided that in order to make this activity worth while some means should be provided for insuring the adoption and practical application of the classification, so authority was obtained from the Executive Board to confer with the President of the National Association of

Railway and Utilities Commissioners. Ensuing conferences developed a plan that embraced concurrent work by committees of the N. E. L. A. and A. G. A., each formulating a classification best adapted for its needs and as compatible with composite utility commission classifications as possible. The N. E. L. A. and A. G. A. committees then reconciled their respective views so far as permitted by essential differences in the two industries. Subsequently, joint conferences were held of the electric and gas committees with the commissioner's committee on Statistics and Accounts as a result of which a uniform classification was adopted which for the first time not only had the approval of adequate representation of the gas and electric companies but was urged for adoption by the national association of the utility commissioners themselves.

Adoption of National Classification to Date

The above achievement was notable in itself and the foresight of the managing committee in cooperating with the National Association of Railway and Utilities Commissioners was justified by the first practical results obtained in twenty years of effort to secure national uniformity. Today the commissions in the following fifteen states have adopted the national classification for gas companies in their jurisdiction:

Alabama	Michigan
Colorado	Nevada
Connecticut	New York
Georgia	North Dakota
Illinois	Tennessee
Indiana	Utah
Massachusetts	Virginia
	Wisconsin

The extent of the progress made, however, is not fully apparent from a consideration of the number of states alone.

It will be realized that the ideal of uniform accounting has been more than half realized when it is considered that:

The number of manufactured gas companies operating under the uniform classification in states where it has been adopted is 448 companies.

That holding companies have placed the classification in effect in their subsidiary companies in states where the classification has not yet been adopted to the extent of 10 companies.

Total companies operating under classification 458 companies.

Of the remaining 505 manufactured gas companies:

142 are operating in states where the commission has no jurisdiction.

96 are operating in Pennsylvania and Maine which have adopted classifications substantially identical with the national classifications.

152 are operating in states where commissions are considering or intend to consider the classification.

115 are operating in states where no consideration has yet been given to the classification.

If we eliminate the states where commissions have no jurisdiction over utility accounting we find that there are only 363 manufactured gas companies operating in the states which have *not* adopted the national classification as against 458 companies in the fifteen states which have adopted the classification.

With such a splendid record of practical accomplishment before them the accounting representatives in the states that have yet to adopt the classification should be able to take up the situation in their states with full confidence in ultimate success and a realization of their responsibility for making possible the ultimate goal of twenty years of effort—100% national uniformity in gas company accounting.

1924 Plans A. G. A. Committee

The committee is confident that all

that is required to insure the further adoption of the classification is to properly present the status of the situation to the local accountants so that some organized effort can be instituted for uniting the gas companies in each state in favor of adoption. The state and dis-

trict gas associations affiliated with the A. G. A. are the proper channels for carrying on this work and the following assignment of territory to each association has been made for the purpose of organizing local action for the adoption of the classification:

Territory assigned where classification
has not been adopted

Indiana Gas Association	Kentucky
Iowa District Gas Association	*Iowa Montana *Nebraska *So. Dakota Wyoming
Missouri Association of Public Utilities	Kansas Missouri
New England Association of Gas Engineers	New Hampshire Rhode Island Vermont
New Jersey Gas Association	New Jersey Delaware
Pacific Coast Gas Association	California Idaho Oregon Washington
Pennsylvania Gas Association	Ohio
Southern Gas Association	Maryland W. Virginia No. Carolina So. Carolina *Mississippi *Florida
Southwestern Public Service Association	*Texas *New Mexico Oklahoma Arkansas Louisiana
Wisconsin Utilities Association	*Minnesota

*Commission has no jurisdiction.

A letter will be forwarded to the president and secretary of each of the above associations urging that they assume direction of the work in territory assigned them and offering the cooperation of the national committee on their work.

If you are an accountant connected with companies operating in the above states, interest yourself in the local developments, and get in touch either with the state association in charge of your territory or write direct to association headquarters. Your interest and help are needed to make this effort successful.

Interest of the Holding Companies

The holding companies have a large interest in the universal adoption of the classification as it is of distinct advantage to them to have their various subsidiaries wherever located operating under the same system of accounts. Two large companies have already arranged to put the uniform classification into effect in all their subsidiaries even in states where the local commission has not taken action. Letters will be forwarded to all holding companies operating in states where the classification has not been adopted urging that they have the local accountants in their subsidiary companies take an active part in the local action initiated on the classification.

Interpretation of Uniform Classification

While our members who are operating under the uniform classification are

unanimous in stating that its advantages far outweigh the slight expense of changing from their former system the A. G. A. committee on uniform classification of accounts is prepared to answer any questions of the members regarding the classification and to make any necessary interpretations of specific accounts on points that may be raised.

If you have any questions as to interpretation in your territory, be sure to present them to the chairman of the committee, Mr. W. J. Meyers, who should be addressed care of the American Gas Association, 342 Madison Ave., New York, N. Y.

100 Per Cent Adoption by 1925

The above in general covers the plans of the A. G. A. committee for 1924. Their success will be insured if the local accountants get behind this movement with the enthusiasm which its importance to the whole industry deserves. Do not let it be said that *your* state stands in the way of the accomplishment which we have been striving for so long. Consult the directory of affiliated associations published in this issue and write the association in charge of your territory of your interest and willingness to help in the work. Write to association headquarters or to the Committee on Interpretation of Uniform Classification if there are any questions in your mind as to the operation of the classification. If we all get together we can secure 100% adoption by 1925.

Mr. Moody's Opinion

In his rate book on public utilities, John Moody says:

"Of all the types of securities now in existence gas company stocks were among the first to become true investments, and have made one of the best records. As early as 1855 some of these were good investments."

Testimony Relative to Retirement Reserve Before Interstate Commerce Commission in Steam Railway Depreciation Case

GEORGE C. MATHEWS, Railroad Commission of Wisconsin

THE CLASSIFICATIONS of accounts for gas and electrical corporations which have been recommended to member commissions by the National Association of Railway and Utilities Commissioners make no use of the word "depreciation." Instead they provide for meeting expenses incident to the retirement of property and for a retirement reserve. Accounting for so-called depreciation involves the assumption of a decreasing value of assets with repeated partial restoration of value by the substitution of new property. Whether the regulatory body's conception of value is of a changing quantity, largely dependent, at any given date, upon the age of the multitudinous units which go to make up an operating utility or railroad, or whether it conceives of value as a comparatively stable quality in a well maintained property, a quality not largely dependent on age of constituent items, the purposes for which a reserve need be created appeared to the committee which drafted the accounting classifications to be adequately covered by those classifications. As there stated, "the purpose of the account is that the burden of such (retirement) losses may be as nearly as practicable equalized from year to year, but with due regard for amount of earnings available for this purpose in each year." It is further stated that, "The losses which this account is intended to cover are those incident to important retirements of buildings, of large sections of continuous

structures, like electric line (or gas mains), or of definitely identifiable units of plant or equipment...."

The classifications nowhere refer to any reserve account being intended to cover the difference between the original costs and such conception of value as results from a theoretical diminution in accordance with age. Unless we are prepared to think of the railroad business as one whose whole life is to terminate and whose activities are to cease, a reserve on any such basis would be useless. No one contends that the railroads, or any individual road of any magnitude will ever be entirely restored to a position where all items of property are new. Such a condition would involve a quite impossible coincidence of retirement dates on all property, or it would mean that property still retaining a great deal of capacity to render service would be retired.

The history of railroads and of large utility enterprises evidences the fact that normal operating condition is not and never, after the original construction, will be a new condition. Furthermore, except as financial considerations may cause it to vary in some degree, the operating condition is fairly constant, with the use of physical property of various ages. This constant condition means that, if we think of the railroad business as one to endure indefinitely, the greatest amount of useful reserve will be the amount required to take up the fluctuations in retirements which are actually

to be met in operation. Since the property will never be restored to a condition of newness nor to anything like that condition, a reserve carried on the theory of a complete restoration can never be useful.

Of course, if we make the assumption that the business, in its entirety, will some day become obsolete, investors will lose unless, during its time in operation, the business has provided assets which may be substituted for operating property, when that disaster occurs. Even if such an occurrence can be anticipated, however, it does not follow that security holders will be protected because the normal and economical condition is for such assets to be represented in the very property which is to become obsolete, and which would then have only a salvage value, this in turn being diminished by the cessation of the industry to whose use alone much of the property is adapted. Unless sums reserved to provide against the day of complete obsolescence are to be withheld from use within the industry and invested in securities, to be liquidated upon the passing of the industry, a reserve of the character mentioned would not even protect the investor.

My purpose in discussing these conditions is that an understanding of the nature and results of such a reserve seems to be helpful in the determination of what are the purposes for which a reserve should be provided. In practical operation, barring the remote possibility of ultimate obsolescence of the entire railway business, the greatest amount ever needed in the reserve is enough to meet such portion of the cost of the greatest deviation from normal operating conditions, as is not met by current maintenance charges. What relation this amount will have to the investment in

the property will depend on many factors, such as the size of the composite property, the number and nature of the units of which it is made up, and the degree of stability in condition which the property has reached during its operating history. In a comparative sense, and, I believe, in an actual one as well, the railroad business has gone a long way toward stability and standardization in condition of property. It is large, both in the aggregate and in the number of units of the several classes out of which its physical plant is made up. Small individual roads may offer exceptions, but in the main the railroad systems do not have fluctuations in condition which are of material importance relative to the total investment. I think it follows then that, generally speaking, there is no need of reserves of any considerable size. The multiplicity of physical units comprising a railroad system, as indicated by the testimony here, makes it possible, and not only possible but the result of actual practice, for losses incident to retirement of property to be met through current maintenance, with exceptions in the case of large individual units. Not only this, but such losses are met without serious distortion of maintenance accounts except as financial conditions make deferred maintenance almost unavoidable.

There seems to be a tendency to regard fluctuations in maintenance as an evil and to think it of highest importance that maintenance or substituted provisions for reserves should always distribute retirement losses equally over the accounting periods during which the retired property had been in use. I think the importance of this has been greatly exaggerated. If it is important to know the average or the normal cost of meeting property retirements a study of results

for a period of years is as helpful and in some cases productive of more accurate results than their equal distribution on the company's book, by application of a formula.

If the selling price of the railroad's product were immediately adjusted to the cost, it might be desirable to go a long way toward equalization of maintenance. The fact is, however, that price changes are not coincident with cost, and recording maintenance costs so as to distribute them equally over all periods has no special virtue unless each period is also to produce just the revenue to meet the cost. Unusually large retirement losses must be equalized. Failure to do so may have serious effects on credit, but equalization of ordinary losses is of no help in fixing rates and may have serious consequences for the roads. I say it is of no help in rate fixing because the commission must either accept the equalization results produced by the road or change those results. In order to pass upon them the commission must make just the same study that would be required if no equalization had been attempted by the carrier; equalization, therefore, is not helpful in rate making.

The nature and size of reserves to cover retirement losses will vary both with the size of the property and the degree of diversity in its units. Given properties of similar character, the larger property will have less need of carrying retirement reserves. If this large property is composed of great numbers of units the need of reserves is reduced to a minimum. Property such as ballast, ties, telegraph lines, crossings and signs, not only can be, but is, renewed without the use of reserves and without adverse effect upon the public or upon the credit of the industry. Equalization is needed only for relatively large units of prop-

erty, of such size that absorption of their loss in one year would result in serious distortion of expenses and in an adverse effect on credit, and units which are so infrequent that the retirement expense does not equalize itself to a large extent.

For these classes of property no one can forecast lives. Reserves built up on a life basis will have the appearance of scientific handling but the substance will be lacking. The life of ties or poles or rails may be estimated with some degree of accuracy, but when we come to the very property against which reserves are needed, life estimates are mere guesses. In Chicago a great union station building is being constructed. The loss of this terminal would be a serious matter. Yet no railroad man knows how long it will last and if he makes an estimate no one is in a position to pass upon his estimate. The property is so substantial that, except for inadequacy or obsolescence, which cannot now be foreseen, it may be expected to last almost indefinitely. The very properties for which reserves are needed are properties whose lives cannot be determined, even within the somewhat elastic limits of the term "reasonable accuracy."

The rule proposed in the accounting classifications of the National Association of Railway and Utilities Commissioners is sufficient to cover the situation, i.e., that a retirement reserve to cover losses incident to retirement of large units or of large sections of continuous structures is sufficient. In setting up such a reserve life estimates are not needed and may be worse than useless. Proper and adequate reserves need only provide against extreme fluctuations in retirement losses and experience and judgment should not be subordinated to life tables which, except by accident, cannot be correct.

Roads whose continued existence is dependent upon a single industry are in a condition, of course, where the cost of retirement, with the depletion of the in-

dustry, must be provided for, as far as possible. The principle of establishing a reserve to meet retirement is entirely consistent and will meet such situations.

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Horrible Murder in Coal Bin*

LAST NIGHT ANN THRACITE was found strangled to death in the coal bin. The evidence points conclusively to B. P. Coke, who has been annoying the old lady for years.

Ann Thracite first came to New England about one hundred years ago and has since made many friends who have depended upon her to such an extent that they will sorrow greatly over the loss they have sustained. Up to a few years ago, she had enjoyed the very best of health and the prospects were that she would go on living and rendering valuable service to the community for another century, but during the past years she had been weakening. She never completely recovered from her war experiences.

B. P. Coke was seen to leave the gas works yesterday afternoon and, as it has been due largely to him that Ann Thracite has been losing her hold on life, it is suspected that he was the cause of her death. He was also her direct heir which supplied the motive for the crime. All her wealth goes directly to him.

That the crime should have been committed by him, however, comes as a great surprise to all his many friends, because, except for this unnatural enmity, he was considered a model in every respect. He is much cleaner, has no bad habits and is much more refined. As a matter of fact, he possesses so

many virtues that it will not be possible to get along without him.

All of Ann Thracite's other near relatives have such bad habits that the prospect is that sooner or later they will be barred from entering within the limits of any city. B. I. Tuminous, for example, is an inveterate smoker, having absolutely no regard for the rights of others and causing millions of dollars of damage in every city into which he is allowed to enter.

Apparently, however, in this family the law of heredity does not hold unless the power of education is greater than that of heredity, for B. I. Tuminous is the father of B. P. Coke. Under the circumstances, it appears that even though there is not sufficient evidence to convict B. P. Coke of the crime, he will be sentenced to do all the work and to perform all the services that have been performed by Ann Thracite, and as a further penalty he will also have to take over the work of B. I. Tuminous.

This may seem like a misapplication of justice, but it has been demonstrated by experience that B. P. (By-Product) Coke can render this service much better than can or could any of his relatives, or any one else for that matter, and that if he is kept busy doing this work, he will not have time or inclination to repeat any such action as that of last night.

*From the Providence Gas-ette.

Public Utilities Reports

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P. U. R. [PUBLIC UTILITIES REPORTS]

QUESTION SHEET NO. 43—AUGUST 16, 1923

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Test
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knowledge
on
these
Questions

421. What is meant by prudent original cost?
422. How is prudent original cost of utility property obtained?
423. A utility company operates in several cities. It carries only one retirement reserve, applying to all of its plants. Is this proper?
424. A public utility company rents certain buildings the value of which is excluded from the rate base. How should the revenues from them be accounted for?
425. Some buildings owned by a utility company are not used for the service. How should they be accounted for?
426. A public utility company desires to create a total bonded indebtedness of \$2,000,000 and to make an immediate issue of the bonds to the amount of \$800,000. May a mortgage be made covering the entire issue of \$2,000,000?
427. Is there any objection to confining regulation of utilities by State Commissions to operation outside of cities?
428. In fixing the rate base Commissions must give consideration to present prices. Is it necessary to have a new valuation every time a rate comes before the Commission?
429. Is the power which the municipalities have to fix rates in franchises a power to regulate rates?
430. A utility company can capitalize what it pays for a franchise. May it capitalize the cost of furnishing free service to a municipality on the theory that this is a payment for the franchise?

[Preserve this Sheet]

PAGE 1

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Contact With State Information Bureaus—J. S. S. RICHARDSON, Philadelphia, Pa. Nominating—F. W. CROWE, New York, N. Y.

Dynamic Texas

CHARLES W. PERSON

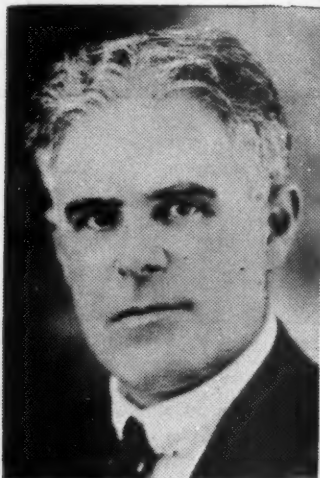
WHEN A BABY is born in Texas, so the story goes, the mother doesn't teach it to say "Mamma." Instead, the entire family work on the youngster until the first understandable English coming from the lips is, "The Great State of Texas."

You don't hear this story from Texans. Outsiders tell it who are amazed at the growth and prosperity of the Lone Star State and the breezy optimism and industry of its citizens. For, after all, the big thing they work for in Texas is Texas. Everything is subjugated to the welfare and importance of the State. If the public utility business is a good thing for Texas, every public-spirited citizen in Texas is right up and for the utilities, day and night and all the time. This does not mean the business men only. It means the farmers, preachers, the churches, schools, colleges and every social or religious organization in the State.

Texas is a veritable public relations Utopia. Of course there are a few dark spots in an otherwise bright picture, but

no one worries about them. They will correct themselves in time. And there is little, if any, trouble from labor, from agitators, pet theorists, soap box orators and like pests who infest our thickly populated cities. There is practically no destructive effort. Everyone is "plugging" for the State and there is a healthy and rather amusing rivalry between cities. Ignoring for the moment a few isolated situations where conditions are on the mend, Texas can be described from the utility man's viewpoint as that part of the United States where the public utility business is singularly free from those hampering restrictive factors that are the worry of every operator who is working for a better public understanding and appreciation of the business.

By way of illustration: You can tell your audience at Dallas, Fort Worth, San Antonio, Galveston, Houston, or other city that they should support, protect and permit their utility companies to prosper; and they will listen attentively to you. But when you finish your



C. W. Davis, Chairman, Texas Committee on Public Utility Information

little exhortation you will be told frankly that they have been doing these things for years and know all about the economics of the utility business and the relation of utility service to community development. In other words, they are already "sold" on our business. Yet they will come out in generous numbers to hear you—to hear you talk about something they already know better than you do. But not because they expect to hear anything new. They come out because you are to talk about the things that are making for a more prosperous Texas. And that's what they're interested in.

"Pulling badgers" is no longer the favorite entertainment for the tenderfoot in Texas. Outsiders are cordially welcomed, and a visiting utility man is fairly deluged with attention and those fine courtesies which make his visit a succession of happy memories. They have an expression in the Southwest which deserves mention. Whenever a utility man forgets himself momentarily and says he hasn't the time to do this thing

or that, he will be challenged in open meeting by some ambitious fellow who will rise to his feet and exclaim: "Mr. Chairman, what is time to a hog?" Which means in Texanese that time is not to be considered when the issue at stake concerns something which is good for the industry and therefore good for the great State of Texas.

Public utility operators make poor speakers, we are told. And the complaint is frequently made that the most difficult task on earth is to get a gas man away from his desk long enough to address a public gathering on his business. Not so in Texas. Some of them have talked so much in public that they have all but outworn their welcome. In one town, for example, the local gas man dares not get to his feet at a Rotary Club gathering before some one will say: "For heaven's sake, can't you forget the wonderful gas business?" And so it goes. But this almost oversold condition hasn't put a stop to public speaking. They are importing outsiders now and then, and are advertising their talks in language so alluring that the public dare not stay away for fear of missing something new. And there is the radio, you know. And the newspapers, too, which carry thousands of columns of utility news each year. Yet all of this is aside from the educational work going on in schools, colleges and other institutions. No "outlet" is overlooked. And there is no cry of propaganda, for the men or women of Texas who have a few dollars saved have some of it invested in utility securities. This is true of the newspapers as well. Is there any reason why they should not support the things they own? And what chance do you suppose an agitator has who starts knocking the Texas utilities?

At the recent meeting in Galveston of the Texas Committee on Public Utility



F. M. Hoag, Vice-Chairman, Texas Committee on Public Utility Information

Information, a splendid opportunity was afforded to hear about the Texas work from the lips of those who are actually out on the firing line doing it. The meeting was attended by seventeen district chairman, each one of whom was called upon to make a report describing the specific activities of his district. Each speaker had to answer nine questions, as follows:

Conference and communications with utility men.

Public addresses and talks. How engagements are made and filled.

Relations with newspapers.

Work in schools and colleges.

Other activities.

Problems met in effort to tell the utility story. Do utility men make and fill speaking engagements?

What cooperation from outside district is necessary?

Extent of utility advertising in their home newspapers.

In addition to the writer, visitors from outside Texas were B. J. Mullaney, Peoples Gas Light & Coke Company, of Chicago; and W. J. O'Connor, Southwestern Bell Telephone Company, St.

Louis. The meeting lasted all of one day and half of the next, with a luncheon and a banquet to keep things humming along. The chairmen's reports were generally favorable—extremely so, when compared in the light of similar work carried on in other states. But the enthusiasm of the thing was what impressed one. If a telephone man in one county was having a hard time of it, he was promised help from the gas or electric man in the next county. A mere matter of riding three hundred miles in a flivver to help out some fellow in an obscure corner of the state was what cooperation meant to some of these enthusiasts. The members of the executive committee meet each week in Dallas, and it is an overnight ride for some of them to get there. But they are always on hand. On the way back home they stop off sometimes to tell the high school children or the children in the grade schools why the utility business is the greatest business on earth.

C. W. Davis, Dallas Power & Light Company, Dallas, is chairman of the



Geo. McQuaid, Director, Texas Committee on Public Utility Information

Committee. He has working with him on the committee representatives of the Electric Bond and Share, Doherty, Stone and Webster, natural gas and telephone interests in Texas. The director is a veteran newspaper man, George McQuaid of Dallas. Last year McQuaid traveled two thousand miles in his flivver visiting the newspapers and utility men of his state. If he runs into a local situation where the representative of the gas company, say, is not on speaking terms with his newspaper editor, he camps in that town until friendly relations between the two are resumed.

While on these trips he is sort of an itinerant missionary, converting everyone he can to a newer understanding of the utility business and its responsibilities. But, now and then, just to show that he is a good Texan, he stands beside the flag and attains heights of eloquence on the subject that never fails to attract,—the Great State of Texas. And that's what all the public utility men in Texas are doing—talking on Texas. Incidentally, that is one reason why the utility business in Texas is getting on so nicely with its public.

♦ ♦ ♦

Rumors of Rumors

IN A RECENT interview in Fobes, Col. Robert Stewart, Chairman of the Standard Oil Company of Indiana, was quoted as saying:

"No business reaches a certain size and importance without having all sorts of untrue stories circulated about it. These rumors and rumors of rumors about any institution gain general belief only because no definite policy of publicity to combat them is undertaken by the people in authority. It is not enough to advertise a product. People ought to be acquainted with the honest and high character of the institution back of the product.

"I have always believed that one of

the biggest jobs of the head of a business is to undertake definitely to deserve favorable public opinion and then to go out and win it. If the railroads had seen the necessity for this many years ago, I believe they would have avoided many of the difficulties they have been encountering for a couple of decades.

"This is not a job that applies only to the very big corporations, like ours, with assets of hundreds of millions of dollars. It applies to the smaller corporations too. If you don't have the public for you, a seriously large part of it is likely to be against you; and no business can continue to exist successfully unless a large part of the public is for it."

A Correction

In our last issue, through an error, Mr. James M. Bennett was given the title of Advertising Manager of the United Gas Improvement Co.; this position is held by Mr. Wm. F. O'Donnell. Mr. Bennett is Publicity Manager.

GAS

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The Fuel of the Future

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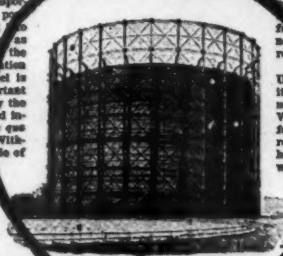
By Lamar Ginsberg

WHEN the paleolithic Man discovered fire and learned that the earth about him abounded with matter that could be burned and in burning could furnish him with heat not only for his bodily comfort in the winter but also for fashioning tools and weapons and for cooking his food, his position of transcendent importance in human affairs. This position has gradually developed until now one of our great civilizations, as society grew more complex, the arts and sciences of civilization were evolved, until today we are undoubtedly the most important single community organization in the human race in their homes and industrial life. Fuel is the base question of modern civilization. Without it, there could be no existence of the comforts of a better life; industrial enterprises would be practically nil—in fact, society, as it is constituted today, could scarcely exist. It is therefore not at all strange, when disruptive forces, such as strikes, make their appearance in the mow of the day, that such and every manner of disturbance should be seriously concerned over the matter and be apt to view them as blows directed against the very foundation of the structure of modern life. A greater calamity cannot be imagined than the shutting off of our supplies of fuel.

is concentrated great heating power. This power or energy is released when the fuel is brought to the proper temperature and burned. It is well known that all fuels do not burn with the same degree of readiness. Thus, while a piece of paper can be ignited by the heat of a burning match, and similarly a piece of gas heating fuel from the gas burner, nevertheless wood must first be heated by a fire before it will itself catch and burn. On the other hand, coal is still more difficult to burn, and a wood fire must first be built up before it is possible to burn coal. It will ignite. It is at a stage of coal burn where coal burning more or less steadily a rapid and the various combustibles, with products of combustion, carbon dioxide or carbon monoxide or even hydrogen.

Coal is a fuel and a source of energy. The heat energy is released when the coal is burned. The heat energy is released when the coal is burned. The heat energy is released when the coal is burned.

belongs to this class. A still younger coal is brown coal. It is a substance that has not yet had time to so complete a decomposition as real coal. Hence it does not possess the heating value of coal. There are the peat coals, which contain high percentages of moisture, and which are of no great technical or industrial importance. From



MUCH has been said, these twenty years, of rising fuel prices, about the fuels of the future and even about the fuels of the present. The present article develops around the case to which far too little attention has been paid. Mr. Garfield reminds us that all fuel—coal, wood, oil or what you will—is the potential before or during combustion. He tells us that the coal that will be burnt more cheaply and more efficiently in a gas furnace will drive more cheaply and more efficiently on a large scale in a central plant than on a piece-meal scale in the consumer's old stove or old furnace. Ergo, he tells us, the fuel of the future is unchangeable until the gas law is admitted this ought to be the universal symbol for heat efficiency. But we are not sure of only one thing regarding it.

H. B. SELL—The Editor.

There is added proof every day that—If it's done with Heat you can do it Better with GAS in factory, shop and home.

The Peoples Gas Light & Coke Co.
CHICAGO

A New Chicago Ad

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Division of Supply Manufacturers—J. J. GREENE, New York, N. Y.

To the Stove Industry

CHARLES T. AARON, Chairman, Gas Range Division, A. G. A.

The A. G. A. has been persistent in its efforts to have manufacturers produce ranges constructed in accordance with its specifications. The Chairman of the Division of Gas Range Manufacturers of the Manufacturers' Section believes much can be accomplished in this direction by informing those manufacturers who are just beginning the production of gas ranges or propose so doing, of the importance and value of having their appliances meet the A. G. A. specification requirements. Accordingly he plans addressing the following article, as a letter, to all stove foundries in this country, enclosing with it a copy of the Standard Gas Range Specifications. (EDITOR'S NOTE.)

WITH EACH succeeding year the demand for gas ranges increases and new manufacturers are entering into the gas appliance manufacturing field.

There never has been a time when the need for earnest cooperation between the stove industry and the gas industry was felt as much as at the present time, and the need for this cooperation will be greater in years to come.

There was a time when the stove industry existed without either the making

of gas appliances or the slightest attention paid to the gas industry because of the immense production possible in their respective plants for coal ranges and furnaces. During this time the gas industry could exist or did exist without pushing the sale of gas ranges because of the demand for gas for lighting and other purposes. Today, however, the gas range has become a necessary part of every kitchen where gas is available.

It is interesting to go back to the early

days of gas range manufacture and to note that the stove industry did not deem it of sufficient importance to make patterns. The early part of the work was carried on by the meter manufacturing companies in the United States to create a larger market for gas meters. One large company sent its superintendent abroad to study the gas range situation. After two years he returned and his company began to manufacture gas ranges. A quotation from their almanac, issued in 1881, shows the far-sighted vision of this writer, and is, as far as we know, the first attempt to catalogue gas appliances in the United States.

"This is an 'important' subject, with a very extensive and constantly increasing field of operations to work in. To till this field properly, the 'united efforts' of gas companies (through their officers) with manufacturers is of paramount advantage to ultimate success in a rich harvest, by the largely increased sale of gas to the companies whose energies are properly exercised in the right direction, and to a fair margin of profit to the manufacturer. That 'united' effort in this branch of industry is needed and sure reward is certain. The gas company, by a persistent energy to introduce stoves, etc., and other appliances for burning gas—into every household or factory where possible, by exhibiting a line of stoves and gas engines to their customers, and by offering to them every aid possible to assist in educating them to become larger consumers by the use of gas for domestic purposes generally,—and further, to make prices of stoves and other apparatus needed, and the price of gas, so low as to make it a necessity for consumers to use it. The manufacturer should devote his best energies and skill to the production of stoves for cooking, heating, etc., also to all other appliances for the use of gas, so as to

give the 'best possible results' for amount of gas consumed, and to sell his productions at as low rates as possible, consistent with a fair margin of profit. Competition of various makers, anxious to secure this trade, is a good guarantee on this head."

After several years the sale of gas ranges increased so rapidly that the meter manufacturers were glad to relinquish this end of their business, and one by one the stove manufacturers began to make gas ranges.

Whether or not the manufacturer is seeking to merchandise his product through the commercial departments of appliance stores, or the gas companies, he still needs to cooperate to the best of his ability in order that the art of cooking by gas may not suffer because of failure on the part of the manufacturer to realize certain elements that go to make a satisfactory gas appliance. The gas industry on the other hand is just as vitally interested in this phase whether they merchandise the product or not. The sale of gas cooking is assured, but the purchaser of any gas appliance is entitled to a perfect working appliance from the gas standpoint, no matter what price is paid for that appliance.

Too many manufacturers rush into the manufacture of gas appliances with the thought that the sale and output of a large number of gas ranges will keep up the tonnage of castings in the foundry. They also are under the impression that a gas range consists mainly of a box of sheet steel, supported by plain castings, with a certain number of cored castings or pipe burners drilled with a certain number of holes. Too often they learn of certain things which have been overlooked after considerable expense has been put into castings and patterns, and in some cases after the ranges have been actually placed on the market.

The American Gas Association is following in the steps of previous associations in compiling a gas range specification for the guidance of manufacturers. These specifications were first compiled in 1908 and have been changed and added to from year to year. They are the result of the tireless efforts of some of the best gas engineers and of the best-known stove men in the industry—the committee being changed from year to year so as to bring in new thoughts and ideas.

The manufacture and sale of inferior working gas appliances is bringing about an increasing number of city and state regulations along the safety lines. In most cases the proposed ordinances are drawn by politicians, and many impractical suggestions are creeping in, making it harder to merchandise any and all gas

appliances. If the appliance manufacturer will pay strict attention to the basic principles of gas combustion, the need of these so-called safety ordinances will be eliminated.

In closing, I would like to give a definition of the word "cooperation," i.e.: To work together, or to labor for the same result.

The same result that both industries are after is the greatest output of satisfactorily working gas ranges. But bear this in mind that no gas appliance can be considered as "sold" until that appliance is connected and adjusted in the kitchen of the purchaser and working as nearly 100% efficiently as possible. Not until then can it be considered a credit to the manufacturer, to the gas industry, to the retailer, or the ultimate purchaser.

✦ ✦ ✦

A Creed Neither Apostle nor Nicene—but that of the United States' First Journalist President

"I believe in advertising and publicity. It has done more to bring humanity to right understanding than almost anything else in the world.

"When you put advertising forward you must believe in it. Advertising to be effective must be honest and must carry a message. I want to advertise the United States of America as the best republic in the world; I want to advertise American life as the best in the world; I want to advertise American business as the best business in the world, and, God helping me, we're going to make it the best business in the world without letting government destroy it."—WARREN G. HARDING.

* * * * * So does every good gas man.



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Wire Enameling by Gas

J. A. ROBERTSHAW, Robertshaw Thermostat Company

THE MANUFACTURE of enameled mag-
 net wire is one branch of the electrical
 industry wherein gas and its proper ap-
 plication plays a most prominent part,
 and its superiority to any other fuel has
 been so generally proven that it might be
 said that it is the universal fuel for this
 class of work. Many of the large manu-
 facturers of electrical equipment have
 tried to favor their pet fuel, electricity,
 but have been forced to the use of gas
 to meet competitive prices of their vari-
 ous articles.

Enameled wire is bare copper wire
 with several coatings of enamel baked on
 it. The enamel forms a resistance coat-
 ing and accomplishes the same purpose

as a silk or cotton insulation, but can be
 applied much more cheaply and adds ad-
 vantages to the wire in that its diameter
 is not so greatly increased. A magnet
 made with enameled wire is of much
 smaller size and weight than one of equal
 strength made of cloth-covered wire, as
 the magnetic strength is directly pro-
 portional to the number of feet of wire
 used in winding the magnet.

Examining a wound magnet it will be
 observed that considerable twisting and
 pulling of the wire must necessarily take
 place during its winding, and it can be
 readily seen that the enamel coating must
 be properly applied to insure its remain-
 ing intact while the wire goes through

this more or less rough handling. If the enamel is brittle, it breaks off. If soft, it rubs off. In either case, "shorts" are produced and the magnet is defective. It is plainly evident that a happy medium between a soft and brittle coating must be struck, and let it be said here that there are few processes of manufacture where the limits are so exacting as in the manufacture of enameled wire.

And what is it that makes possible a proper coating? Several factors enter into it but the most vital is an accurate control of the temperature at which the enamel is baked. Because of the closeness of the temperature limits, any fuel less flexible than gas or electricity is forced out of the picture. Gas holds the upper hand, however. A rough estimate would give gas about 80 per cent of the ovens doing this class of work. Gas is the cheaper fuel but the fact that it can be *automatically* controlled to the most exacting limits of temperature variation is the sole reason for its almost universal use.

An example of what the manufacturer of this article has to go through might be easily pictured if one takes as an instance the enameling of a No. 40 wire. This wire is only .003 inches in diameter. There are 33,000 feet to the pound. There are four distinct coats of enamel applied to it so that it passes through the enamel and oven four times before being wound to the spool, the finished product. A wire of this diameter even when cold will not stand much strain and if, while passing through the oven, a sudden surge of heat, or overshoot of temperature strikes it, it will break.

An oven having as high as forty-eight spools of wire being fed into it, and with each strand of wire passing through the oven four times represents a goodly mass of wires and pulleys, and certainly a

sorry mass to the operator when his temperature has gotten away from him, the wires parted, and the job upon his hands of rewinding each strand of wire over the various pulleys from the spool of bare to the finished spool of enameled wire. And a sorrier sight to the manufacturer who, for six and two-tenths miles of his product the consumer might pay, roughly, \$1.75.

An examination of the following table gives an idea of what a competitive field the manufacture of enameled wire is and enables the reader to more easily realize that to meet competition successfully there must be no interruptions in the output of machines, and further, the greater a machine can be speeded up without danger of breakdowns, the more easily is the manufacturer going to meet competition.

No. Wire	Diameter	Ft. Per Lb.	Approx. Whol.
			Pr. Per Lb.
40	.003	33,000	\$1.75
30	.010	3,200	.50
20	.032	323	.30
14	.064	80	.28

The gas salesman endeavoring to sell his product to such a manufacturer could not rest his argument on the fact that gas is flexible and that its instant control is at the finger tips by the simple turn of a gas valve. Even with a constant pressure on the gas there are so many things that can cause rapid temperature fluctuations that an operator would have to sit with his hand on the gas valve and his eye on a thermometer to produce the results necessary in this business. Thus we say that gas maintains its position in this industry because of the fact that it can be *automatically* controlled, by thermostats, to the nicest requirements.

For the control of wire enameling ovens, simple, mechanically operated thermostats were designed to gradually,

raise or lower the gas flame the instant there is the slightest inclination of the oven temperature to drop or increase. Temperature controllers functioning in this manner preclude any possibility of heat surges arising in the oven, and the wire, in its four passes through, has an even baking.

There are many processes of manufacture that have been or can be simplified and loss hazards removed by a close study of temperature conditions and the application of automatic temperature controllers, selected to meet the particular needs of the process.

✦ ✦ ✦

A Christmas Party

More than 500 employees of the Elmira Water, Light & Railroad Company and their families, including about 150 children, were the guests of Vice-President and General Manager Frederic H. Hill at the annual Christmas party for the Water-Light family, held at Rorick's Glen, Friday evening from 7:30 to 11 o'clock.

The dance pavilion was prettily decorated in keeping with the Christmas season, with a large electrically lighted Christmas tree in one corner.

The early part of the evening was devoted to an entertainment for the children, consisting of a three-reel moving picture, "Snow White," several excellent dancing specialties by Misses Mina Thomas and Natila Peck, pupils of John J. Cummings, and a number of entertaining monologues by Fred Harris, a company employee. Following the entertainment, Santa Claus led the children in a march around the hall to the Christmas tree, where toys, candy, oranges and apples were distributed. Will Y. Ellett presided as Santa Claus.

The hall was then cleared for dancing, which was begun with a grand march lead by Vice-President Hill and his daughter, little Miss Margaret Hill. Johnson's orchestra played for the dancing. Later in the evening refreshments were served in the restaurant.



Continuous Plate Heating Furnace

(under construction)

Capacity 100 plates per hour weighing 250 lbs. each.

Gas consumption 25,000 cu. ft. per hr.

COMMERCIAL SECTION

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LOUIS STOTZ, Secretary

J. P. HANLAN, Vice-Chairman

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 PHENICIE, C. R., Green Bay, Wis. (Wisconsin)
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 RASCH, W. T., New York, N. Y.
 SMITH, D. R., Baltimore, Md.
 SMITH, W. L., Battle Creek, Mich.
 VINCENT, G. L., Syracuse, N. Y.
 WEISER, J. A., York, Pa.

CHAIRMEN OF SECTIONAL COMMITTEES ORGANIZED TO DATE

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 Commercial Policy—P. S. YOUNG, Newark, N. J.;
 CHAR. A. MUNROE, Chicago, Ill.; F. J. RUT-
 LEDGE, Philadelphia, Pa.; R. B. BROWN, Mil-
 waukee, Wis.; F. R. BARNETT, New York, N. Y.

Home Service—ADA BESSIE SWANN, Newark, N. J.
 Salesman's Manual—H. D. VALENTINE, Chicago, Ill.
 Sales Stimulation—J. P. HANLAN, Newark, N. J.

The A. G. A. Monthly Sales Service

THE EXECUTIVE BOARD has approved a plan of the Commercial Section for the preparation and issuance of a Monthly Sales Service.

This Service will consist of a monthly Sales Bulletin, sixteen pages and cover, containing sales plans, publicity and special features applicable to each month of the year. These bulletins will be mailed on the 15th of the month so that sufficient time will be available to enable the Sales Manager to locally work out the details for the following month.

There will also be mailed on the first of each month Special Reports pertaining to subjects of particular interest to the Sales Manager and his Assistants, covering the best practices and plans of gas companies and other successful business enterprises. Some of the subjects to be covered in these special reports are:

- Sales Conferences.
- Retail Pricing of Appliances.
- Intensive Sales Campaigns.
- Direct by Mail Advertising.
- Newspaper Advertising.
- Mailing Lists and how to use them.
- Window and store displays, etc.
- Methods of compensation for salesmen.
- Sales Methods used in Customer-Ownership Campaigns.

Space will be devoted in each of the *Monthly Sales Bulletins* to giving helpful suggestions for organizing and conducting Home Service Departments.

The physical make-up of the material will be in standard 8½ x 11 loose-leaf form, punched and indexed for filing in a 3-ring binder which will be supplied as part of the service.

The subject matter which will make up this service will be prepared by the Sales Stimulation Committee of the Commercial Section with the aid of a marketing counsellor, James F. Newcomb & Company, Marketing and Advertising Specialists.

This service will provide member companies with practical working plans as regards every phase of special appliance campaigns, advertising features, sales letters, direct advertising, sales contests, window and store displays, and the handling of sales organization.

In view of the comprehensive nature of this service which will require the expenditure of a considerable sum it will be necessary, under the approval to the plan given by the Executive Board, for our member companies to underwrite 1500 subscriptions at \$2.50 a month each before we can proceed. This is actual cost to the Association.

We plan to begin this Sales Service with the March issue, but require some guarantee that the 1500 subscriptions will be underwritten before we are authorized to commit the Association to the expenditure involved in getting out the Service.

Member companies are requested to notify Association headquarters promptly the number of sets of this new sales service they will subscribe for.

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Subscribers to New Merchandising Service

Below is given a list of the subscribers, to January 14, to the new merchandising service. (EDITOR'S NOTE.)

GAS COMPANIES

<i>Company</i>	<i>City</i>	<i>State</i>
1. Adirondack Power & Light Corporation	Saratoga Springs,	New York
2. Allentown-Bethlehem Gas Company	Allentown,	Pennsylvania
3. Amherst Gas Company		Amherst, Mass.
4. Athol Gas & Electric Company		Athol, Mass.
5. Atlantic City Gas Company	Atlantic City,	New Jersey
6. Beloit Water, Gas & Electric Company		Beloit, Wis.
7. Binghamton Gas Works	Binghamton,	New York
8. Boston Consolidated Gas Company		Boston, Mass.
9. Bristol Gas & Electric Company		Bristol, Va.-Tenn.
10. British Columbia Electric Railway Co., Ltd.	Vancouver,	B. C., Canada
11. Brockton Gas Light Company		Brockton, Mass.

<i>Company</i>	<i>City</i>	<i>State</i>
12. Brooklyn Union Gas Company, The	Brooklyn, New York	
13. Burlington Light & Power Company	Burlington, Vermont	
14. Bucks County Public Service Company	Newtown, Pennsylvania	
15. Cambridge Gas-Light Company	Cambridge, Mass.	
16. Carolina Power & Light Company	Raleigh, N. C.	
17. Charlestown Gas & Electric Company	Boston, Mass.	
18. Chattanooga Gas Company	Chattanooga, Tenn.	
19. Citizens Gas & Fuel Company	Terre Haute, Indiana	
20. Citizens Gas Light Company	Quincy, Mass.	
21. City Gas Company	Marquette, Michigan	
22. Central Hudson Gas & Electric Company	Poughkeepsie, New York	
23. Coast Counties Gas & Electric Company	San Francisco, Calif.	
24. Cohoes Power & Light Corporation	Cohoes, New York	
25. Concord Gas Company	Concord, N. H.	
26. Consolidated Gas Company of New Jersey	Long Branch, New Jersey	
27. Consolidated Gas Company of New Jersey	Red Bank, New Jersey	
28. Consolidated Gas Company of New Jersey	Asbury Park, New Jersey	
29. Consumers' Gas Company	Reading, Pennsylvania	
30. Consumers' Gas Company of Toronto, The	Toronto, Ont., Canada	
31. Counties Gas & Electric Company, The	Ardmore, Pennsylvania	
32. Danbury & Bethel Gas & Electric Light Co., The	Danbury, Conn.	
33. Danielson & Plainfield Gas & Electric Company, The	Norwich, Conn.	
34. Derby Gas & Electric Company	Derby, Conn.	
35. Des Moines Gas Company	Des Moines, Iowa	
36. Detroit Edison Company, The	Port Huron, Michigan	
37. Electric Bond & Share Company	New York, N. Y.	
38. Elkhart Gas & Fuel Company	Elkhart, Indiana	
39. Empire Gas & Electric Company	Geneva, New York	
40. Emporia Gas Company	Emporia, Kansas	
41. Eastern Service Company, The	Boston, Mass.	
42. Eastern Wisconsin Electric Company	Fond du Lac, Wisconsin	
43. Fall River Gas Works Company	Fall River, Mass.	
44. Freeport Gas Company	Freeport, Illinois	
45. Fort Dodge Gas & Electric Company	Fort Dodge, Iowa	
46. Garden City Gas Company	Missoula, Montana	
47. Gas Light Company of Augusta, The	Augusta, Georgia	
48. Georgia Railway & Power Company	Atlanta, Georgia	
49. Greenville Natural Gas Company	Greenville, Pennsylvania	
50. Hartford City Gas Light Company	Hartford, Conn.	
51. Haverhill Gas Light Company	Haverhill, Mass.	
52. Hyde Park Gas Company, The	Scranton, Pennsylvania	
53. Illinois Power & Light Corporation	Danville, Illinois	
54. Illinois Power & Light Corporation	St. Louis, Missouri	
55. Kings County Lighting Company	Brooklyn, New York	
56. Kingston Gas & Electric Company	Kingston, New York	
57. LaPorte Gas & Electric Company	LaPorte, Indiana	

<i>Company</i>	<i>City</i>	<i>State</i>
58. Lima Natural Gas Company, The	Lima, Ohio	
59. Lock Haven Gas Light Company	Lock Haven, Pennsylvania	
60. Lowell Gas Light Company	Lowell, Mass.	
61. Luzerne County Gas & Electric Company	Kingston, Pennsylvania	
62. Malone Light & Power Company	Malone, New York	
63. Mobile Gas Company	Mobile, Alabama	
64. Municipal Gas Company	Albany, New York	
65. New Gas Light Company of Janesville	Janesville, Wisconsin	
66. New Haven Gas Light Company	New Haven, Conn.	
67. New Jersey Northern Gas Company	Flemington, New Jersey	
68. New Orleans Gas Light Company	New Orleans, Louisiana	
69. North Carolina Public Service Company	Greensboro, N. C.	
70. Northern States Power Company	Faribault, Minnesota	
71. Nova Scotia Tramways & Power Company, Ltd.	Halifax, N. S., Canada	
72. Old Colony Gas Company	East Braintree, Mass.	
73. Orlando Gas Company, The	Orlando, Florida	
74. Ottawa Gas Company, The	Ottawa, Canada	
75. Peoples Gas Company	Glassboro, New Jersey	
76. Peoples Gas & Electric Company	Mason City, Iowa	
77. Peoples Power Company	Moline, Illinois	
78. Peoples Power Company	Moline, Illinois	
79. Petoskey & Bay Shore Gas Company	Petoskey, Michigan	
80. Philadelphia Suburban Gas & Electric Company	Chester, Pennsylvania	
81. Philadelphia Suburban Gas & Electric Co.	Jenkintown, Pennsylvania	
82. Portland Gas & Coke Company	Portland, Oregon	
83. Plymouth Gas Light Company	Plymouth, Mass.	
84. Portland Gas Light Company	Portland, Maine	
85. Providence Gas Company	Providence, Rhode Island	
86. Rockford Gas Light & Coke Company	Rockford, Illinois	
87. Rome Municipal Gas Company	Rome, Georgia	
88. Savannah Gas Company	Savannah, Georgia	
89. Sheridan Gas & Fuel Company, The	Sheridan, Wyoming	
90. Southern Minnesota Gas & Electric Company	Albert Lea, Minnesota	
91. Spokane Gas & Fuel Company	Spokane, Washington	
92. Springfield Gas Light Company	Springfield, Mass.	
93. St. Augustine Gas & Electric Light Company	St. Augustine, Florida	
94. St. Joseph Gas Company	St. Joseph, Missouri	
95. St. Louis County Gas Company, The	Webster Groves, Missouri	
96. Suffolk Gas-Electric Company	Suffolk, Virginia	
97. Syracuse Lighting Company	Syracuse, New York	
98. Tampa Gas Company, The	Tampa, Florida	
99. Tucson Gas, Electric Light & Power Company, The	Tucson, Arizona	
100. Utah Gas & Coke Company	Salt Lake City, Utah	
101. Washington Gas Light Company	Washington, D. C.	
102. Washtenaw Gas Company	Ann Arbor, Michigan	
103. Wausau Gas Company	Wausau, Wisconsin	

	<i>Company</i>	<i>City</i>	<i>State</i>
104.	Wilmington Gas Company	Wilmington,	Delaware
105.	Wisconsin Gas & Electric Company	Kenosha,	Wisconsin
106.	Wisconsin Public Service Corporation	Green Bay,	Wisconsin
107.	Worcester Gas Light Company	Worcester,	Mass.
108.	York Gas Company	York,	Pennsylvania

MANUFACTURER COMPANIES

	<i>Company</i>	<i>City</i>	<i>State</i>
1.	American Stove Company	Lorain,	Ohio
2.	Baltimore Gas Appliance & Manufacturing Co.	Baltimore,	Maryland
3.	The Beckwith Company	Dowagiac,	Michigan
4.	The Bryant Heater & Mfg. Company	Cleveland,	Ohio
5.	Chambers Manufacturing Company	Shelbyville,	Indiana
6.	Comstock-Castle Stove Company	Quincy,	Illinois
7.	Detroit Stove Works	Detroit,	Michigan
8.	The J. H. Grayson Manufacturing Co.	Athens,	Ohio
9.	Humphrey Company	Kalamazoo,	Michigan
10.	Peerless Manufacturing Co.	Louisville,	Kentucky
11.	The Peninsular Stove Company	Detroit,	Michigan
12.	Pittsburg Water Heater Company	Pittsburgh,	Pennsylvania
13.	Robertshaw Thermostat Company	Youngwood,	Pennsylvania
14.	United Appliance Company	Jackson,	Michigan
15.	West Gas Improvement Company of America	New York,	New York

AFFILIATED ASSOCIATIONS

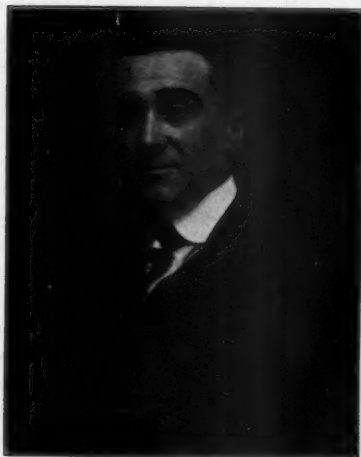
	<i>Association</i>	<i>City</i>	<i>State</i>
1.	Iowa District Gas Association	Des Moines,	Iowa
2.	Southern Gas Association	Atlanta,	Georgia

* * *

ADVERSITY has the effect of eliciting talents which in prosperous circumstances would have lain dormant.

—Horace

Being "Human" Pays



Thos. F. Kennedy

MR. THOMAS F. KENNEDY, Manager of New Business Department of Henry L. Doherty and Company, now has two things to prove to him that being "human," in the true sense of the word, more than pays.

First, there is the record of the various New Business departments, of the Doherty manufactured gas properties, in appliance sales given below:

Appliance and Installation Sales 12 months ending Dec. 1923, \$935,973.70.

Appliance and Installation Sales 12 months ending Dec. 1922, \$370,238.83.

Per cent of increase, 153 per cent.

Number of customers, 110,631.

Appliance Sales per customer 1923, 8.46.

This could only be possible by the most whole-hearted cooperation between the

employees of these properties and Mr. Kennedy. And such whole-hearted co-operation can only be engendered by respect and admiration.

The second proof of this is the scroll reproduced here and which contains the names of 550 new business employees working under his direction together with a Xmas purchase order made out to him for \$1,004.00 by those whose names appear on the scroll.

Both of these records are ones to be proud of and ones that could well be striven for by every man in the industry.



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 PERRY, J. A., Philadelphia, Pa.
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CHAIRMEN OF SECTIONAL COMMITTEES ORGANIZED TO DATE

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 Cast Iron Pipe Standards—WALTON FORSTALL, Philadelphia, Pa.
 Condensing and Scrubbing—F. W. STEERE, Detroit, Mich.
 Chemical—DR. A. R. POWELL, Chicago, Ill.
 Coke—R. L. FLETCHER, Providence, R. I.
 Gas Pipe and Meter Deposits—DR. R. L. BROWN, Pittsburgh, Pa.

Distribution—J. D. VON MAUR, Toronto, Can.
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 Nominating—F. C. WHEEN, New York, N. Y.
 Standardization of Capacities of Consumers Meters—
 WALTON FORSTALL, Philadelphia, Pa.
 Water Gas Operation—J. S. KENNEDY, New York, N. Y.

The Determination of Naphthalene*

RALPH L. BROWN, Organic Chemist and HENRY G. BERGER, Assistant Chemist,
 Pittsburgh Experiment Station.

CURRENT METHODS for the determination of naphthalene in gas are based on the formation of naphthalene picrate, which takes place when naphthalene-bearing gas is passed through a saturated picric acid solution. Indene which is a constituent of both coal and carburetted water gas likewise gives a picrate. This indene picrate is identical in appearance and so strikingly similar in properties to naphthalene picrate that it persists throughout any naphthalene determination, and is reported as naphthalene. These facts have been established by many laboratory tests.

Amount of Picrates in Gas

The picrates obtained from both coal gas and carburetted water gas have been examined and without exception all have shown amounts of indene picrate that could not be disregarded. Samples from five coal-gas plants and nine carburetted water-gas plants were examined in a qualitative way. Quantitative study shows that the extent of this contamination in the samples examined amounts to about 40 per cent in the case of coal gas, and to from 25 to 50 per cent in carburetted water-gas determinations.

* Published by permission of the Director, Bureau of Mines. An abstract of this paper was distributed at the American Gas Association Convention at Atlantic City, Oct. 15-18, 1923.

Effect of Picrates on Naphthalene Determination

These facts show the present picrate method for naphthalene to be quite inaccurate. They explain why many naphthalene determinations give totally impossible naphthalene contents for gas in contact with drip-oil. As a measure of control on naphthalene content in coal gas being sent into distributing mains, or being furnished to a distributing company, it is subject to much qualification unless the picrates be examined as to identity and amount.

In the control of naphthalene contents in carburetted water gas, the picrate test is subject to the same limitations as stated in the preceding paragraph. The use of the picrate test as a criterion of cracking temperatures may be quite misleading. A large quantity of naphthalene in gas is an indication of high cracking heats. Indene is a relatively low cracking temperature product or a product of incomplete or non-uniform cracking, and it is an active gum-forming constituent. Obviously, as a guide in operation, the picrate test as now applied is of limited value unless the picrate be examined.

Within the practical range of cracking temperatures an increase of temperature is productive of an increase in gas volume, and in B.t.u. per gallon of gas oil and at the same time of a very marked decrease in the less volatile hydrocarbons and in the gum-forming constituents of the gas. These are all highly desirable results. The relation of temperature to other cracking conditions has been discussed previously, and need not be repeated here. In a survey made two years ago, the average cracking temperature of the carburetted water-gas plants untroubled with gummy meters was 50 degrees higher than those so troubled.

The restraining influence on operators in employing temperatures higher than 1350°F., which the consensus of opinion then set as the desired figure, was the fear of naphthalene production. In so far as it has entered into the engendering of this restraint, the picrate test for naphthalene, being so in error, has not been a good servant to the gas industry. In the writer's experience, there has been a trend toward the use of higher cracking temperatures during the last two years. In general, this is desirable. It means that probably more and more attention will be paid to naphthalene and naphthalene determinations. The picrate method, accompanied by a specifically determined correction for indene, will doubtlessly continue as an instrument of value. Interpretations to be placed on the magnitude of specific indene corrections with reference to operating practice and results are of greatest value when based on an adequate accumulation of evidence, and are consequently for the present omitted. The literature of the gas industry already is too full of unsupported and unsubstantiated expressions of opinion.

With the true character of the picrates obtained from both coal and carburetted water gas brought to the attention of the industry, it may be confidently expected that methods will be developed with which to measure the true naphthalene content of picrates. An accompanying article gives a method for the qualitative identification of indene in picrates obtained from those gases. As a means of knowing the operating results being secured in the carburetting and condensing units, a careful study of the light oil produced is of far greater value than any number of picrate tests.

The Qualitative Identification of Indene in Picrates Obtained in Naphthalene-in-Gas Determination*

HENRY G. BERGER, Assistant Chemist, and RALPH L. BROWN, Organic Chemist, Bureau of Mines, Pittsburgh, Pa.

IN AN EARLIER PAPER¹ it was pointed out that the picrate obtained by passing coal gas or carburetted water-gas through a picric acid solution is not, as it has been regarded for a quarter of a century, exclusively naphthalene picrate or even nearly so. It is, on the other hand, a mixture of picrates containing a substantial proportion of indene picrate in addition to naphthalene picrate. A knowledge of the actual naphthalene content in gas is important for its control in distributing systems. To this end and as a check on operating results in the carburetting units, the naphthalene content is very desirable information in the carburetted water-gas industry. Obviously, to be of value, naphthalene determinations by the prevailing picric acid methods must be shown to be true determinations of naphthalene; and it must be shown that indene as its picrate does not constitute a large part of the picrates obtained from the gas. As a means of detecting this contamination, the writers have utilized the fact that indene may easily be converted into 2-bromo-3-hydroxyindan², which is a white crystalline material easily separated from the unaffected naphthalene, and equally easily identified. The reactions employed involve the addition of a bromine molecule to a molecule of indene to give 2-3-dibromoindan in which one bromine atom is subsequently replaced by a hydroxyl group. These reactions have been described by Kramer and Spilker, and em-

ployed in the analysis of crude benzol. The writers have simply adapted them to the particular purpose of this paper.

The method involves (1) the liberation of the indene from its picrate by alkali; (2) its collection by benzene extraction; (3) its conversion into the dibromoindan by the direct addition of bromine and by subsequent hydrolysis by steam to the bromohydroxyindan.

The bromohydroxyindan, isolated as indicated later, has been completely identified in our own work, (1) by the melting point of 131° C.; (2) by the method of mixed melting points; and (3) by analysis of the compound for its elemental composition.

It is our purpose in the remainder of this paper to set down, for the use of those of the gas industry who may have need of it, the technique which we have employed in our investigations. It has been our experience that indene, if present to the extent of 0.75 grains (0.05 grams), will yield an easily detectable amount of needle-like crystals of bromohydroxyindan. With greater care in manipulation even lesser quantities may be detected.

Experimental Method

The picrates obtained for analysis are filtered from the residual picric acid solution. The picrate is washed with 40 to 50 c.c. of distilled water through the filter, which has been punctured, into the original bottle. With phenolph-

* Published by permission of the Director, Bureau of Mines.

¹ The Determination of Naphthalene (this issue).

² This compound was called oxybromide of indene by Kramer and Spilker, Ber. 23, 1890, p. 3276, and bromohydroxyhydrindene by Pope and Read, Jour. Chem. Soc. 99, 1911, p. 2071, and 101, 1912, p. 760.

thalein as the indicator a slight excess of alkali (5 per cent NaOH) is added to neutralize the picric acid and to release the indene and naphthalene. The now alkaline solution is transferred to a separatory funnel. The bottle is rinsed with 10 c.c. of c.p. benzene, which is used to extract, with shaking, the alkaline solution. This benzene extract I containing the indene is separated and put in a small dry container. The alkaline solution is again so extracted, yielding extract II.

Enough bromine, preferably in the form of a 40 per cent solution in c.p. carbon tetrachloride, is added to each extract to give a definite coloration, which persists for at least five minutes.

Extract II is then steam distilled in a small round bottom flask (100 c.c.) until nearly free from benzene. At this point extract I is added to the residue from the steam distillation of fraction II, and distillation continued. No auxiliary heat should at any time be applied to the flask. When the benzene of extract I has been

all driven over, then 5 c.c. of distillate is collected. They will contain unchanged naphthalene, and probably some crystals of bromohydroxyindan. The hot residual liquors, amounting to about 10 c.c., are filtered immediately. When the filtrate so obtained is permitted to cool, fine needle-like crystals appear. The crystals are 2 bromo-3 hydroxyindan, and when obtained in this way and dried, melt at about 128 to 129°. This compound, pure, melts at 131°. Further identification is to be found in the fact that these crystals mixed with an equal portion of pure material suffer no depression of melting point.

This test, as stated earlier, is sensitive to 0.75 grains of indene, the derivative of which has never failed to crystallize out from an aqueous solution on standing over night. However, the crystallization usually occurs at once. Smaller amounts require the evaporation of a portion of the solvent by a stream of air without the application of heat to secure the appearance of crystals.

A Pamphlet on Air Compressors

A pamphlet entitled "Trade Standards Adopted by the Compressed Air Society" has just been published, embodying the result of extended study and research on the part of the executives and engineers associated with the members of that organization. It embraces the nomenclature and terminology relating to air compressors and their operations; a history of the development of speeds of air compressors; an explanation of capacities and pressures; instructions for the installation and care of air compressors with illustrations of devices suggested for cleaning the intake air; recommendations for the lubrication of air compressing machines and the cleaning of air receiver piping; a description of the low pressure nozzle test recommended by the Society, and a partial list of applications of compressed air.

Copies may be had by addressing the Secretary of the Society, C. H. Rohrbach, 50 Church St., New York.

The Section's Officers



L. J. Willien

MR. L. J. WILLIEN, the new Chairman of the Technical Section, was born at Terre Haute, Indiana, in 1885. After his early schooling he entered the Rose Polytechnic Institute graduating from there in 1906, having specialized in chemistry.

He first entered the Commercial Laboratory of A. D. Little, Boston, Mass., where he spent a year. Going from there, he took the position of Chief Chemist for the Springfield Gas Light Company, Springfield, Mass., which position he held until May 1, 1910, when he left this company to become the Chief Chemist and Chemical Engineer for

Charles H. Tenney & Company, Boston, Mass.

Mr. Willien entered the service during the war and as Major in the Chemical Warfare Service was commanding officer, Offense Department of Development Division, at Cleveland, Ohio.

He has always been very active in Association work and is a member of the New England Association of Gas Engineers as well as many other societies. In the American Gas Association he has been Chairman of several committees, among them being the Carbonization Committee, the Committee on Disposal of Waste from Gas Plants and the Chemical Committee.



George H. Waring

The new Vice-Chairman of the Section, Mr. George H. Waring, was born in Kingston, Georgia, and received his technical education at the Alabama Polytechnic Institute from which he graduated in 1890.

Two years after graduation he entered the gas industry as a cadet engineer with the Atlanta Gas Company, going from there in 1895 to the United Gas Improvement Company, where he was engaged wholly in construction work. In 1898 he became Assistant Superintendent of the Kansas City Gas Company where he remained until 1900 at which time he took the position of Superintendent of the Savannah Gas Company at Savannah, Georgia. From 1902 to 1910 he had charge of all operation and construction work for the Omaha Gas Company and it was at this time that he

did considerable consulting work in Iowa and Nebraska.

Mr. Waring purchased, reorganized and rebuilt the gas and electric plant at Plattsmouth, Nebraska, and from 1910 to 1917 was Vice-President of the Charleston Consolidated Railway and Lighting Company at Charleston, South Carolina. In 1917 he became General Manager of the Utah Gas & Coke Company, at Salt Lake City, Utah, and in 1919 he assumed the duties of Vice-President and Gas Engineer of the American Public Utilities Company.

Recently, Mr. Waring has resigned from this company to take up consulting work with an office in Grand Rapids, Michigan. There he and other Grand Rapids interests have purchased the Ionia Gas Company, Ionia, Michigan, of which he is now president.

Service of Technical Committees

THE COMMITTEE organization of the Technical Section is practically completed for the year 1924 and most of the committees have held their organization meetings and planned their year's work.

Probably few of our members realize that this committee organization numbers more than one hundred and fifty members of the association located in all parts of the country and experienced in all branches of the technical work incidental to the operation of a gas company. There are also included representatives of the Bureau of Mines and Bureau of Standards, and members of the university staffs of Illinois, Yale, Cincinnati, Ohio State, Massachusetts Institute of Technology and Columbia.

The specific task of the committees forming this group of technical talent is to present reports at the next convention on the subjects enumerated in the list of committees given at the head of this section of the Monthly. However, we wish to again call to the attention

of our members that the expert advice of this committee personnel is also available to them on the problems which they are meeting in the daily operation of their plants.

Each day inquiries are received at association headquarters on every branch of the industry. Where data is not available at headquarters these inquiries are referred to the chairman of the committee within whose scope the inquiry falls without disclosing the source from which it emanates.

The association desires to be in contact with and of service to its members throughout the year and has been particularly successful in helping the smaller company members in this way.

Are you taking advantage of this service? It is only necessary for you to address your inquiry to the secretary of and the services of over one hundred and fifty technical experts will be at your disposal.

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Get Your Copy Now!

The Publicity and Advertising Section has 250 copies of Colonel Fogg's paper, "Factors in Our Commercial Development," on hand. Members may secure a copy by applying to the Publicity and Advertising Section. Owing to the small number on hand at the present time no order for more than 10 copies can be filled.

Employment Bureau

SERVICES REQUIRED

Wanted by a gas and electric company, young man to do office work who has had experience in ledger work, general routine work, and especially on the complaint or service desk. In reply, please give outline of experience, references and salary expected. Address:
Key No. 022.

WATER HEATER SALESMEN WANTED—A large gas company needs several good water heater salesmen to work on commission basis in Western Pennsylvania. Exceptionally good territory.
Key No. 025.

WANTED—Man for Assistant Gas Superintendent. Water gas only. Approximately 7700 meters. Yearly send out 250,000,000 cu. ft. Should have technical training, as well as practical experience. Excellent opportunity for advancement. Cover details of experience as fully as possible in reply. Also give age and salary expected. Address A. G. A.
Key No. 030.

WANTED—Foreman for main laying gang. Must be experienced in laying 4" to 12" cast iron main and able to handle main repair work on low and medium pressure lines. Location, New Jersey Coast. State age, experience and wages expected. Address A. G. A.
Key No. 031.

MIDDLE WEST GAS COMPANY, opening Industrial Gas Dept., desires at least two high grade industrial men. City has diversified list of industrials requiring men of varied experience. Address A. G. A.
Key No. 033.

A WELL-KNOWN INDUSTRIAL APPLIANCE MANUFACTURER has two vacancies for representatives in certain Eastern states. Applicants are requested to forward full details of their experience, sales records and other pertinent information. This is a wonderful opportunity for the right man. Address A. G. A.
Key No. 036.

WANTED—Company operating several gas properties in Middle West can use three experienced industrial gas men. Address A. G. A.
Key No. 037.

SERVICES OFFERED

POSITION WANTED—By-Product, Coke-Oven Executive seeks more responsible connection. Fitted for Chief Chemical Engineer. Assistant-Superintendent or Assistant to Manager. University Graduate. Alexander Hamilton Institute Graduate. Nearly seven years with present 3000 ton plant. Thirty-two years old. Married. Address A. G. A.
Key No. 151.

WANTED—Position of responsibility as Manager or Industrial Fuel Engineer—18 years' varied experience in the gas business. References and service record furnished. Address A. G. A.
Key No. 142.

ENG.-SUPT. of one of the largest gas plants in the country would consider change. Desires to locate with company in which opportunities for future advancement are better than in present position. Is a married man. Has technical University training. No particular preference as to location. Address A. G. A.
Key No. 139.

WANTED—Position as manager of small gas plant (about 10,000 meters) or sales manager of larger plant. Can furnish the very best reference.
Key No. 158.

WANTED—Am open for position as general superintendent, engineer or manager of fair sized property. Fifteen years' experience in combination coal and water gas plants. Experience covers vertical and horizontal coal gas installations, also distribution work. At present am managing plant of five million sendout and have been acting in capacity of assistant engineer. Can furnish excellent credentials from present and past employers. Married. Can report with reasonable notice. Address A. G. A. Monthly.
Key No. 164.

AVAILABLE—Man of executive ability, experienced in all phases of the gas business and sales and advertising work including agency work on National accounts. Capable of creating, planning and following through all forms of advertising. Prefer locating in West or South Atlantic states. Minimum salary of \$4,000. Address A. G. A.
Key No. 167.

WANTED—Superintendent of Distribution seeks similar position high or low pressure. 34 years' experience covering all branches of the work, office, field, and shops. Speaks and writes Spanish. Southern part of U. S. or Latin America preferred but not essential. Address A. G. A.
Key No. 169.

AM OPEN FOR A POSITION of greater responsibility. At present, manager of gas company with over 5,000 meters. Technical training, started in as cadet engineer with one of largest operating companies in U. S. Have eleven years' experience in engineering, construction, distribution and manufacturing, and over four years' in commercial, new business and financial as manager. Prefer manager's position in good sized city. Age 40 years and married. Address A. G. A.
Key No. 170.

GAS ENGINEER—Eighteen years' experience in design, construction and operation of gas plants, all departments, manufacture and distribution, also electrical experience in combination plants desires position of responsibility with progressive company. Past six years chief engineer with large gas company. Address A. G. A.
Key No. 171.

EXECUTIVE, with fifteen years' experience in coal oven practice on plants manufacturing surplus gas for city consumption, desires connection with growing public utility either as executive or position leading to same. College graduate, good personality, married. Available on reasonable notice. Address A. G. A.
Key No. 172.

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